# MünDig Study Steiner Waldorf:

## Maturity and Digitalization in Kindergartens and Schools

Bleckmann, P.; Denzl, E.; Kernbach, J.; Pemberger, B. & Streit, B.

Results of the
**Teacher** Survey

Results of the
**Parent** Survey

# MünDig Study Steiner Waldorf:

## Maturity and Digitalization in Kindergartens and Schools

**– Preliminary version, contains only section 3 and 5 plus chapter 6.1, do not distribute –**

Paula Bleckmann, Elisabeth Denzl, Julia Kernbach, Brigitte Pemberger, Benjamin Streit

Results of the Teacher Survey: Attitudes and practice

Results of the Parent Survey: Attitudes and satisfaction

## 2022

– Dedicated in grateful memory to Prof. Dr. Dirk Randoll –

This project is co-funded and supported by:

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**Appendix:**

    This can be found in 2023 as a separate PDF file for download at https://muendig-studie.de/publications

# English Abstract

**MünDig Study on education in the digital age: Results from Steiner Waldorf institutions**

More than four thousand parents and almost one thousand teachers participated between September and December 2019 in the Steiner Waldorf sample of the German quantitative, explorative online survey **MünDig Study on Education in the Digital Age.** Half of the respondents were from Waldorf kindergartens (under six years) and half from Waldorf schools (over six years), with an additional four hundred students from upper grades 10-13. All three groups answered questions from the "Media Maturity Matrix" (MMM), a survey tool newly developed for a detailed recording of attitudes and practice of education in the digital age in three dimensions: a) screen media versus non-screen media, a) the purpose for which the respective medium is used, and c) the stage of development of the child.

The three groups of respondents showed very highly similar attitudes toward education in and for the digital age in its multiple facets. They all agreed that in kindergarten and elementary school, children should be taught without the use of screen media. Non-screen media should be used for different purposes, such as for producing and presenting, communicating and collaborating, searching and informing, problem solving and modelling. Respondents placed highest priority on three groups of digital education activities: First, on activities deemed fit to foster a firm grounding in real life in the sense of health promotion and prevention of digital risks; second, cooperating with and counselling parents both in educational matters (e.g. supporting parents in fostering children´s screen-free leisure activities) as well as technical issues (e.g. supporting parents in installing time limitation or filter software on children´s devices); and third, supporting children in coping with problematic media experiences. In reference to upper school, practically all respondents additionally advocate the direct facilitation of a critical, production-oriented and critically reflective use of screen media. In middle school, attitudes are much more heterogeneous. On average, parents recommend a starting age for using screen media in educational institutions one or two years earlier than teachers do, and students in upper school feel the starting age should be slightly lower still. The gradual, age-adequate approach to education and digitization is not an attitude unique to the Steiner Waldorf community, as a comparison with the results from the Montessori and the nature/outdoor kindergarten survey shows.

**What is put into practice and how do parents rate this practice?**

In kindergarten and primary school (grades 1-3), teachers in Steiner Waldorf institutions feel they largely manage (in eighteen out of twenty areas of the MMM) to implement a developmentally appropriate digital education. as corroborated by parents who express a high level of contentment. For the last years of school, all groups of respondents identified weaknesses and pressing areas of needed development. The overall level of contentment of these parents is lower than for parents of younger children, but still medium to high. Upper school teachers report a rare to quite frequent use of digital screen media in class. Almost half of the upper school parents rate this as "too rarely practised", another half consider it "just right" whereas a small proportion reports it as "too often practised". Half the parents of children throughout all age groups regard the way in which the kindergarten or school supports and involves them in media education (pedagogically and technically) as "too rarely practised".

**Further training requirements of teachers**

As a general rule, pressing further training needs are stated slightly more frequently for screen media than for non-screen media. Further training needs are even more pressing in the areas of parental cooperation, strengthening children in real life to foster resilience against digital risks, and helping children cope with problematic media experiences. The younger the supervised pupil target groups are, the greater the self-assessed further training needs of Steiner Waldorf educational professionals in the above-mentioned areas of "media education without screens".

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# 3. Method[9]

| Target group | Survey method |
|---|---|
| *Germany-wide survey of Waldorf Kindergartens and Schools* | *Quantitative-explorative online survey via questionnaire* |

| Field phase | Survey of teachers at Waldorf institutions |
|---|---|
| *Survey period from September to December 2019* | *n=989* |

| Survey of parents at Waldorf institutions | Survey of pupils at Waldorf schools |
|---|---|
| *n=4239* | *n=401* |

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9   Lizenzen Icons s. S. 347.

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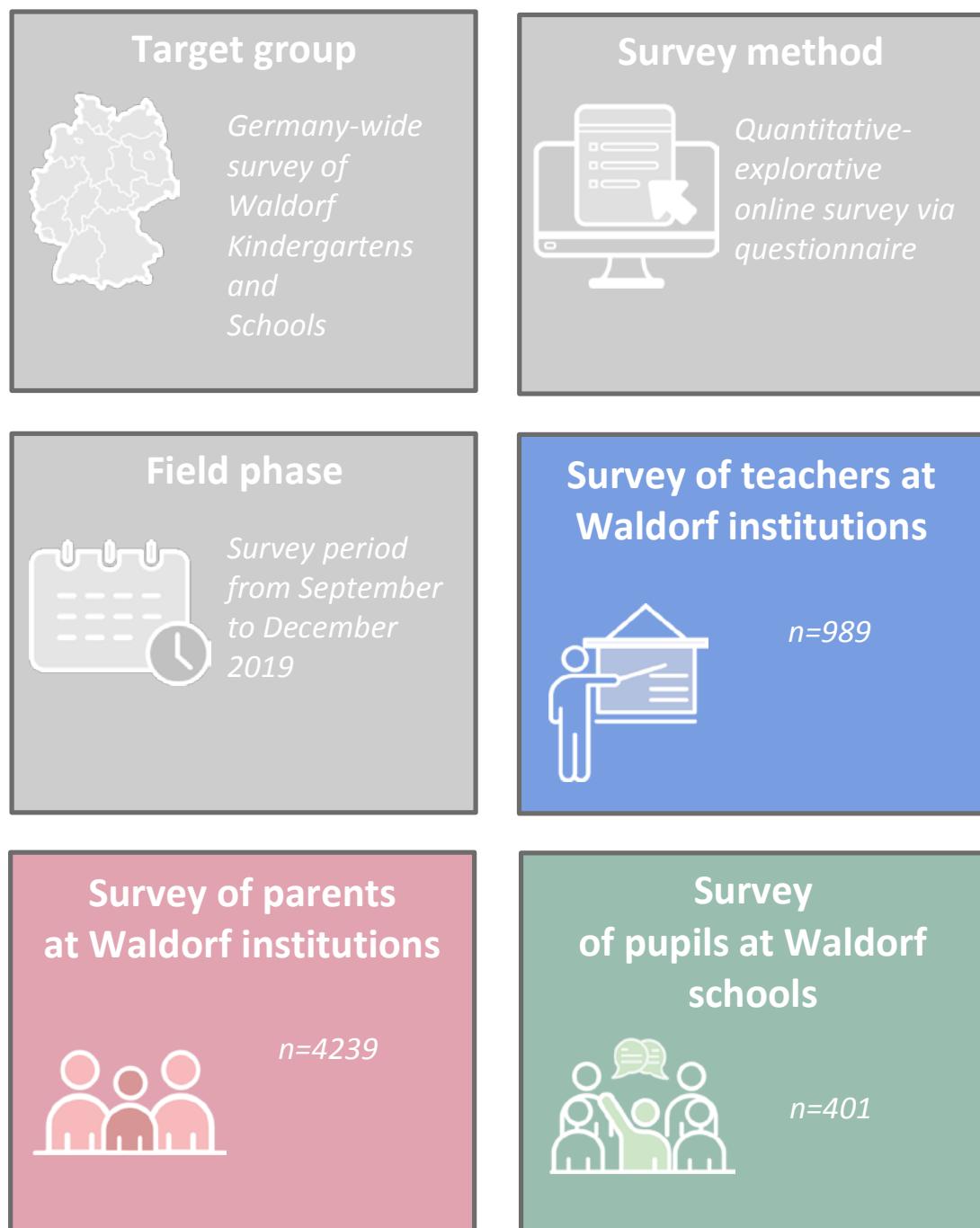
# 3.1 Research Design

*"When aiming to develop hypotheses about a research topic, one should not only take into account already existing theories about it, but also which methods have already been used to investigate it. "* (Bortz J. & Döring, 2006, p. 365)*.*

The MünDig study[10] was conceived as a study with a quantitative-explorative research design, which has become increasingly important in social and human research in recent years (Bortz J. & Döring, 2006). The study was conducted using online questionnaires. This is the first study in Germany of media educational qualifications, experiences, attitudes, and subjective further training needs of teachers[11] and trained staff in alternative educational institutions; and of pedagogical practice with regard to media in alternative educational institutions as well as their evaluation in the eyes of parents and pupils, and higher level of media pedagogical training and further training of teachers in alternative education. Therefore, it seemed reasonable and necessary to conduct an explorative study in this field. This is where the online survey within the framework of the research project "Media Education at Alternative Educational Institutions"[12] at Alanus University starts with the beginning of the term in 2018. The questions underlying the MünDig study can be summarised as follows:

- *What attitudes do teachers, parents and older pupils at alternative educational institutions have with regard to media education?*
- Here, an expanded conceptual understanding of "media education" is chosen, characterised by the following question, which was also used in the announcements for the study: *How can children be accompanied in such a way that they become media literate instead of media addicts, that they are protected from digital risks and at the same time enabled to seize digital opportunities in the long term?*
- *How is media education put into practice by teachers at educational institutions?*
- *How satisfied are parents and older pupils with the media education practice in their educational institution?*
- *What qualifications do the teachers surveyed have with regard to media education, and what subjective further training needs do they report?*

**Preview of the "Method" section.** On the basis of these research questions, the online questionnaire described in Section 3.1.2 was developed following the process of development of the survey instrument described in Section 3.1.1 (including qualitative preliminary studies, expert workshop). Section 3.1.3 presents the *Media Maturity Matrix* (MMM), the central in-depth section of the questionnaire, as well as the "double slide bar" tool developed to reduce the time needed to complete the questionnaire.. Section 3.2 describes the procedure for conducting the survey (including the acquisition of respondents via umbrella organisations, invitation and e-mail reminders). Section 3.3 describes the process of data cleaning and basic analysis used to arrive at the descriptive results presented in this report . Section 3.4 discusses the experience with the survey instrument from the researcher's perspective as well as based on participants' responses in the free text fields. Please refer to the discussion sections at the end of the individual chapters of the in-depth section (see Chapters 6.1-6.10) for an additional discussion of the difficulties, suggestions for changes and additions at the level of individual items from the Media Maturity Matrix.. An overview and systematization of the detailed methodological reflections discussed in the individual chapters can be found in Section 3.4.

Section 10.3 contains a discussion of the possible added value of the newly developed *Media Maturity Matrix,* also in comparison to more commonly employed survey instruments, and Section 10.4 contains explanations of the study limitations.

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10  The MünDig I study is described below. The MünDig II study (survey period March to May 2021), in which the consequences of the COVID 19 pandemic, among other things, were also recorded in a follow-up survey to the MünDig I study, will be published separately. Inquiries about the current status of the publication can be made at medienmuendig@alanus.de or to benjamin.streit@alanus.edu.

11  In the following, unless explicitly stated otherwise, "teachers" (or in some figures the broader term "professionals") always refers to the survey of both teachers at schools and pedagogical staff at daycare centres (early child education settings, ECES) and kindergartens. Employees of educational institutions other than the pedagogical staff did not participate in the survey.

12  The staff members and volunteers involved in designing the survey instrument and conducting the study are listed on page 16.

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# 3.1.1 Origin and foundations of the survey instrument

For the compilation and new development of the survey instrument for the MünDig study, the research team of the project "Media Education in Alternative Educational Institutions" reviewed various survey instruments from research and practice. The following media-related empirical surveys already existed at the time the study design of the MünDig study was created and were analysed or included in its development:

| Author, Year of publication | Survey instrument | Description and specifics of the survey instrument |
|---|---|---|
| Moessle, 2012 | Berlin Longitudinal Study Media | Questionnaire for parents, teachers and pupils from a survey on media use and media effects research among pupils in grades 1 to 7, including questions on parents´ and teachers´ attitudes towards children's screen media use |
| Bitzer et al., 2014 | Level 2 – Questionnaire for professionals working in the field of prevention of problematic screen media use. | Print questionnaire with query on media education and media (addiction) prevention approaches separated into five age categories (cf. excerpt in the appendix in Section 3.1.1) |
| Kernbach, 2021 | Questionnaire for recording further training needs of teachers as well as counselling needs of parents from the point of view of teachers at Steiner Waldorf schools | Designed as a pre-post survey instrument: collect data on requirements before conducting specific training (pre-) and evaluate the extent to which changes have been accomplished by the end of the training (post-). |
| Schwippert et al., 2014 | Computer and information-related competences of pupils in grade 8 in international comparison | Classification of teacher types differentiated according to the perceived potentials and risks of using digital media in the classroom |
| Schmid et al., 2017 | Digital Education Monitor 2016: Schools in the digital age | Teacher survey instrument on the school's technical equipment, the pupils, the types of digital learning content offered, forms of learning and learning concepts, differentiated according to use in the classroom, for homework, for lesson preparation by the teacher, and for communication with pupils or colleagues; as well as pupil survey instrument. |
| Nistor, N., Lerche, T., Weinberger, A., Ceobanu, C. & Heymann, J. O., 2014. | Towards the integration of culture in the Unified Theory of Acceptance and Use of Technology | For teachers: Attitudes towards the use of digital screen media for instructional purposes: perceived usefulness, ease of use, safety and privacy, self-efficacy, technical support, perceived behavioural control, attitude. |
| Media Education Research Network Southwest [mpfs], 2022 | Annual study series: mini-KIM, KIM, JIM, FIM, SIM from kindergarten age to young people | Results of annual Germany-wide representative surveys of parents and children on media use, media equipment, perceived risks, family media rules, etc. |
| Randoll & Peters, 2021 | | Waldorf alumni survey: Items on the topic of media education/education in the digital age |
| Tetzlaff & Bleckmann, 2019, Barz, 2019 | Education and School – Parents Study 2019 | Two questions on media-related attitudes of school parents (attitudes towards cell phone use restrictions and towards use of digital screen media in class) |
| Brodbeck, 2018 | Results of an Empirical Study of Parents at Swiss and Liechtenstein Waldorf Schools | A subsection of the survey contains a questionnaire and open text fields covering the topic of education in the digital age |

**Table 2** *Survey instruments used in the development of the online questionnaire for the MünDig study*

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In addition to published survey instruments, it was also possible to refer to a bachelor thesis supervised by Prof.[in] Paula Bleckmann (Bernuth, 2016) on the recording of parental questions and concerns in the context of the Waldorf Federal Parents' Conference (BERT, n=69). Some of the results of the other studies were not published or completed until after the MünDig study had been conducted (Kernbach, 2021; Randoll & Peters, 2021). However, the survey instruments were already made available to the research team by Kernbach and Randoll during the conception phase of the MünDig study.

**Participation of cooperation partners.** The German-based cooperation partners of the research project "Media Education at Alternative Educational Institutions" (German Waldorf School Association, German Association of Waldorf Kindergartens, German Montessori umbrella organisation, German Association of Nature and Forest Kindergartens) were involved in the development of the survey instrument. On the one hand, the cooperation partners organised theme-finding workshops at educational institutions: A moderated exchange was initiated in half-day to full-day workshops with the participation of nursery to upper school teachers, parents and pupils at one large Montessori-oriented and one large Waldorf-oriented institution, the recorded results of which were incorporated into the conception of the survey instrument. A central finding was that all three target groups emphasised the importance of the developmental stage of children and young people. Participants found it difficult or refused to answer questions on their attitudes and their practice of media education if the question did not include differentiation according to age or developmental stage of the child. On the other hand, the representatives of the cooperation partners contributed to the development through their activities in the project's scientific advisory board and in a separate two-day expert workshop described below. Finally, the cooperation partners also commented on and reviewed the pre-pilot version of the survey instrument. This resulted in significant contributions to the development and improvement of the *Media Maturity Matrix* (see Section 3.1.3).

**Preliminary studies on self-assessment of technical skills.** To develop a small section of the MünDig survey instrument, it was also possible to draw on the results of a survey conducted over a period of two years among students of the bachelor's degree program "Childhood Education" and the master's degree program "Pedagogy" at Alanus University, as well as among trainees at the School for Social Pedagogy (*Fachschule für Sozialpädagogik*) in Siegburg by Jasmin Zimmer.[13] The participants in the survey had already worked in early childhood education (ECE) settings or schools, or had some professional pedagogical experience, so that a transfer of the results to people who work in pedagogical professions appears reasonable. First of all, many different technical skills were measured in the classic way using items on a four-point Likert scale (see among others Zimmer, 2016, see also appendix Section 3.1.1). The answers could then be included in the development of the survey instrument as a self-assessment of subjective technical skills for the MünDig study, which was queried on a six-point Likert scale using examples. Items with a low level of difficulty in the previous surveys were positioned on the left, while those with a higher level of difficulty were positioned further to the right in ascending order.

**Expert workshop December 2018.** Participants: Paula Bleckmann, Thomas Mößle, Christian Boettger, Jörg Boysen, Dirk Randoll, Robin Schmidt, Heinz Brodbeck. In a two-day intensive workshop. Researchers with a research focus on "media education and alternative education" exchanged their experiences with different survey methods, making use of the existing studies and questionnaires in *Table 2* and questionnaires mentioned above, and worked out recommendations for the developing the survey instrument for the MünDig study.

**Considerations in deciding between new development and recourse to existing questionnaires.** The advantages of using already validated scales were highlighted as providing comparability with the results of other studies. The decisive disadvantage was that it was not possible to adequately describe the media educational practice in alternative educational institutions. Overall, the participants in the expert workshop mentioned a large number of possible levels of differentiation. The levels of differentiation **marked in bold are those** with a central significance for media education in alternative educational institutions according to the expert workshop and the preliminary qualitative studies:

- **Age or stage of development of the children**
- Pupils with and without special needs
- **Different forms of use and learning objectives from media education, media didactics and computer science education.**

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13  PhD student working with Prof.[in] Bleckmann and lecturer at the Fachschule für Sozialpädagogik in Siegburg.

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- Differences depending on the subject taught (Art, Mathematics, Languages, etc.)
- Facilitating the acquisition of new skills for parents/guardians vs. directly for pupils
- **Digital screen media vs. non-electronic media**
- Differences between several alternative educational concepts (Montessori vs. Waldorf vs. Outdoor Education vs. others)
- Perspective of teachers vs. parents vs. pupils

Drawing on these considerations, the proposal was developed to focus the central levels of differentiation in a broad and newly developed survey instrument that can be used for the different target groups in the same or very similar form. Finally, it was unanimously recommended not to develop separate survey instruments for different target groups (e.g. a "Waldorf questionnaire" in distinction to a "Montessori questionnaire", a parents' questionnaire, a pupils' questionnaire, different questionnaires for teachers of different subjects, a questionnaire for ECE teachers etc.). [14]

**Stages of questionnaire development.** Following the expert workshop, the study investigators followed three strands in developing the survey instrument:

1. Compilation of questions for the overall questionnaire (for a description of the structure of the completed questionnaire, see Section 3.1.2) and for the in-depth survey *Media Maturity Matrix ("*Which medium at which age for which purpose?", see Section 3.1.3)
2. Development of an efficient technical solution for the rapid query of an age range
3. Formulation of item pools for eleven areas of specialisation,[15] and selection of "shortlisted" items, for each of which an illustration was prepared.

In the next step, all three strands of the development were joined together and presented in a print version of the survey instrument, without illustrations, to the advisory board members and cooperation partners for comment. On this basis, the first electronic version of the survey instrument was then created, internally tested for smooth technical functioning, piloted by 20 test persons representing different target groups completing the draft version of the survey, who commented in writing and by telephone (*Table 3*). On this basis, technical difficulties were identified and partially resolved (see Section 3.4), and the authors could make final deletions and reformulations.

|  | Steiner Waldorf | | Montessori | |
|---|---|---|---|---|
| 16-19 years (pupils) | ✓ | | ✓ | |
|  | Parents | Educators | Parents | Educators |
| Nursery (0-3 years) | ✓ | ✓ | – | ✓ |
| ECE (kindergarten) (3-6 years) | ✓ | ✓ | ✓ | ✓ |
| Elementary school (6-10 years) | ✓ | ✓ | ✓ | ✓ |
| Secondary school (11-19 years) | ✓ | ✓ | ✓ | ✓ |

**Table 3** *Overview of test subjects for the pilot version of the online questionnaire*

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14  A preliminary version of an age-differentiated query can be found in the appendix under Section 3.1.1.

15  Of the original eleven domains, ten are included in the final version (see Section 3.1.3).

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## 3.1.2 Description of the survey instrument

When the survey was conducted, the MünDig questionnaire consisted of a total of 71 questions for teachers and 66 questions for ECE staff. Parents of school children were asked a total of 36 questions, parents of children in ECE settings a total of 37 questions, and the surveyed pupils aged 16 and older were asked only 25 questions. The average processing time indicated by the research team at the beginning of the survey – determined on the basis of the results of the pilot phase – was about 40 minutes for teachers and about 35 minutes for parents. For the pupils, no indication of the expected duration was given.

**Note on gender:** In order to avoid discrimination, gender-sensitive language was used in the German questionnaire, with a slight formatting difference between teachers and pupils. This aspect is not relevant to the English translation of the study report.

**Thematic structure of the questionnaire.** The versions of the online questionnaire for teachers, parents and pupils are largely similar in their structure and content. The online questionnaires of the MünDig study can basically be divided into eleven thematic complexes (cf. Figure 2); one of them, namely the in-depth section on the *Media Maturity Matrix (MMM)* (see Section 3.1.3) is in turn divided into ten domains.
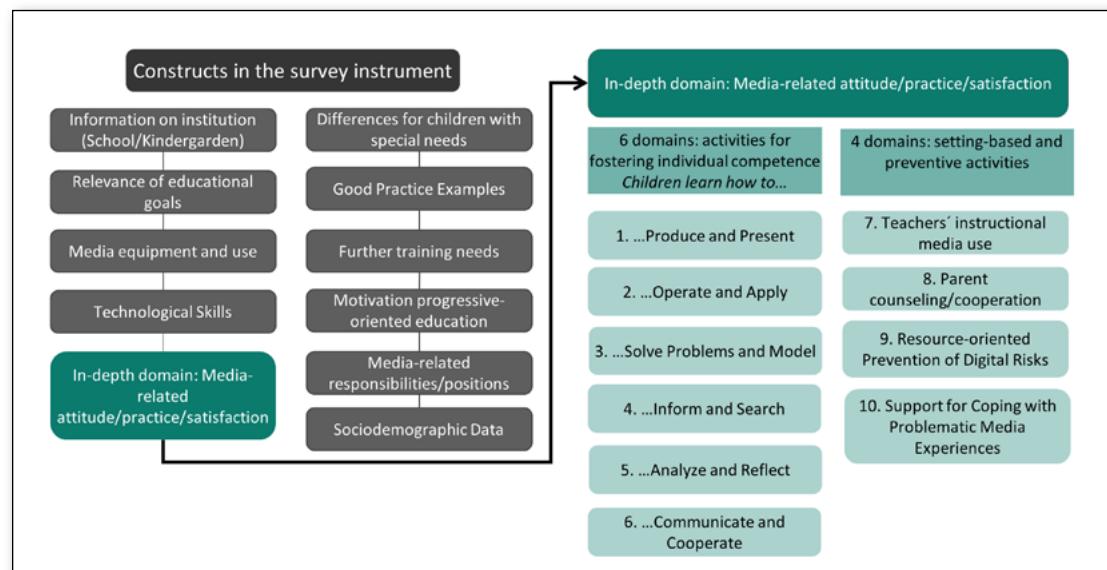


*Figure 2*  Overview of thematic constructs in the survey instrument of the MünDig study (left) as well as the ten competence domains queried within the Media Maturity Matrix (MMM) area of specialisation (right).

At the beginning of the survey, data related to the educational institution (e.g., alternative orientation – i.e. Montessori vs. Steiner Waldorf vs. other – of the educational institution, age of the children cared for) were collected, followed by an analysis of the relevance of ten superordinate educational domains (arts, sciences, mathematics, language, etc.). In a further step, the personal media usage behaviour as well as the media equipment and technical skills of the respondents were recorded. In the third step, the MünDig study turned to the in-depth domains of media maturity education: For each of the ten domains (see Section 3.1.3), the ECE staff and teachers were asked about their media-related attitudes as well as their practice in the respective domain. For each domain, parents and pupils were asked about their media-related attitudes as well as their satisfaction with the practice in the educational institution of their children (parents´ survey) or their own educational institution (pupils´ survey).

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Open text fields were provided for comments on media education for children with special needs/ inclusive media education and about good practice examples. Additional questions covered the further training needs for teachers, and the motivation for the alternative educational direction or educational institution as well as media-related commitment (e.g., in the development of media concepts). The questionnaires concluded with a few socio-demographic questions (e.g., age, gender, number of children).
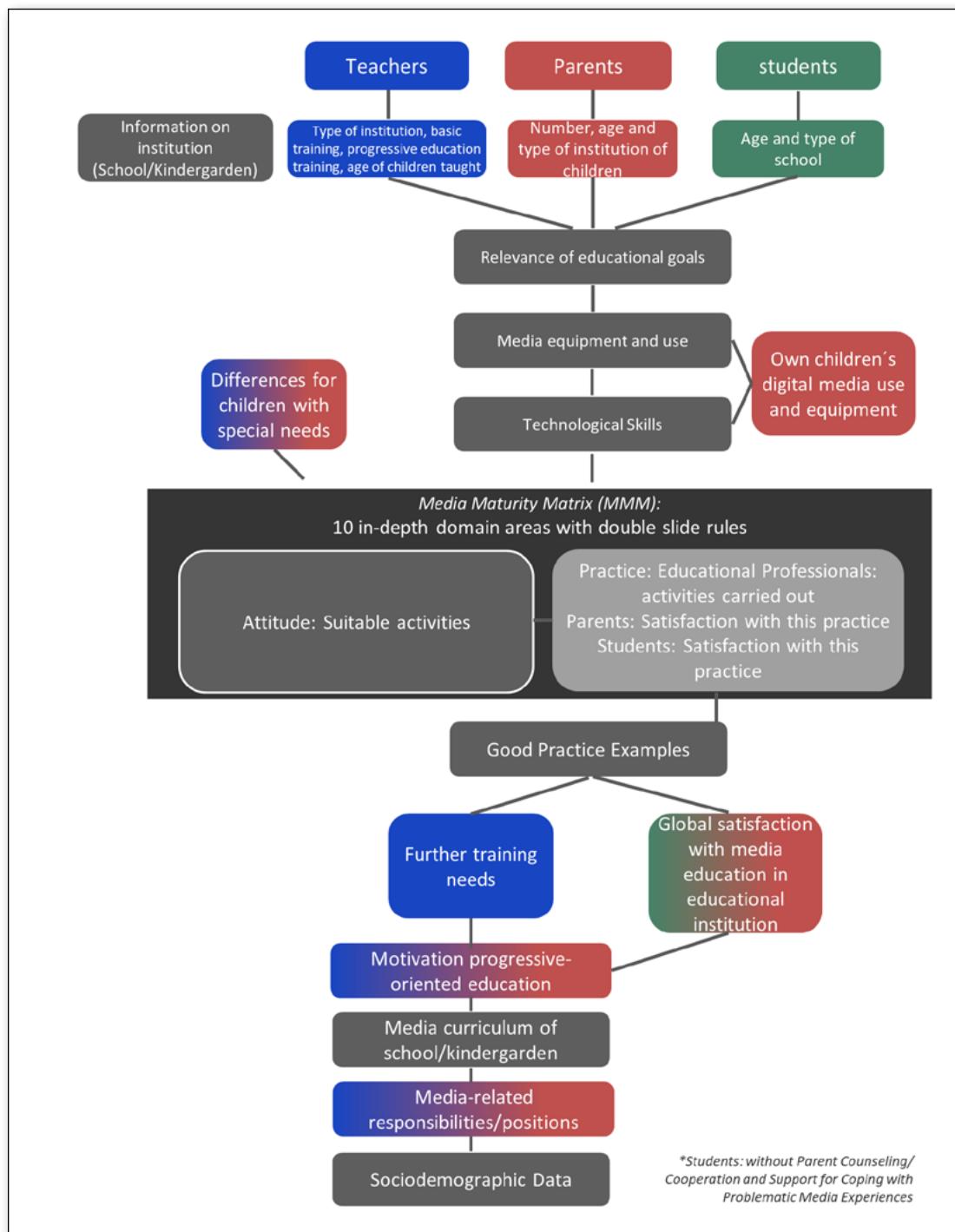


**Figure 3**  *Survey instrument of the MünDig study: differences and similarities between the questionnaires for teachers, parents and pupils. Grey: all three target groups; blue: teachers; red: parents; green: pupils*

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**Overview of the online questionnaire – differentiated by target groups**. Figure 3 shows the overall structure of the questionnaire once again, with a breakdown into target groups (teachers in blue, parents in red and pupils in green, for the acquisition of participants from each target group see Section 3.2.1): Which of the three groups was asked which part of the questions? In the figure, grey means that these questions were presented to all three groups. If only two of the three target groups worked on a topic, this is shown in the figure as a two-colour field with a colour transition.

**Question Types.** A wide variety of questions were asked: There were dichotomous questions, choice questions with possible multiple responses, and dropdown selections. In addition, open text fields (with a limited number of characters) for giving age or professional qualifications were used, as well as longer open text entries (with an unlimited number of characters), e.g., when mentioning the further training needs of teachers or when describing good practice examples. Technical skills were identified using a five-point selection scale (see Section 4.3). The relevance of higher-level educational areas as well as the respective further training needs according to educational areas were queried by means of assignment to priority 1 or 2 or "not selected". The questioning of the ten competence domains in the area of specialisation was structured according to the same pattern after an introductory "test question": Before the first of the ten domains, a test question was asked to ensure that the respondents understood how to use the "double slide bar" questioning tool (see Section 3.1.2). Subsequently, sample items were used in all ten domains to ask respondents which media-related activities they would find suitable in each area and, in the case of teachers, which of these they would implement in practice. On a five-point Likert scale, the teachers were then asked about the frequency of practice implementation and the parents were asked about their satisfaction with the practice of this domain in the child's educational institution. Due to the length of the survey instrument, the exact wording of the questions is not presented here in a bundle, but is given as a footnote to in the presentation of the results in each case.

# 3.1.3 MMM: The Media Maturity Matrix – Survey with double slide bar and illustrated items

The in-depth area of the MünDig study already mentioned in Section 3.1.1 is described below by means of the question type "double slide bar" with illustrations.

**Problem and goal of media education inquiry.** Preliminary studies in the context of the project "Media Education in Alternative Educational Institutions" (see Section 3.1.1) showed that teachers and parents in alternative educational institutions favoured a strong differentiation in questions on theirmedia-related attitudes. It was noted, for example, that when it comes to media use in the classroom or during childcare hours, respondents differentiate according to the purpose of use and the age group of the children. The experts found that previous systematics for classifying media education-related attitudes of teachers from mainstream media education research (see Section 3.1.1 as well as et al. Köhler et al., 2014; Puentedura, 2014.) did not fit the target group well enough. Therefore, the final version of the questionnaire was developed within the framework of the project, following corresponding preliminary studies and taking into account the feedback received after piloting the survey instrument (see Section 3.2.2). The innovative part in the survey of attitudes (teachers, parents, pupils) and practice (teachers) or satisfaction with practice (parents/pupils) consists of the survey of ten media-related competence domains, called *Media Maturity Matrix (MMM)*.

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**The three-dimensional[16] survey instrument *Media Maturity Matrix (MMM)*.** The survey instrument developed for the MünDig study – called the Media Maturity Matrix – is presented below. Figure 4 gives an overview of the *Media Maturity Matrix*. However, the three dimensions presented are not queried independently of one another. For example, the media educational attitude of the respondents is recorded by having them indicate at what stage of development (queried over an age range, **1st dimension**) they consider a spectrum of 60 items to be useful or suitable. The items correspond to 60 activity examples that can be assigned to different learning goals/purposes (**3rd dimension**), communicated by different media (**2nd dimension).** Thus, the query of the 2nd and 3rd dimension is combined in the form of the example activities. In the practice query ("What is meaningful?") following the attitude questions ("What is implemented?"), a simplified dichotomous query for the second dimension ("Which medium?") is used instead, namely a distinction between screen-based media and media without screens. There was about 80% overlap between the items asked in the school survey and the ECE setting survey, but there were also differences: one requirement was that three items each (for domains 1 to 7 and 10) should be assigned to "screen-based media" and three to "media with screens". Another specification was that two items should be basically suitable for the age of the children in care (0-6 years for the ECE setting/kindergarten survey, 6-18 years for the school survey). Thus, partly different activity examples were used in the ECE/kindergarten and school survey.
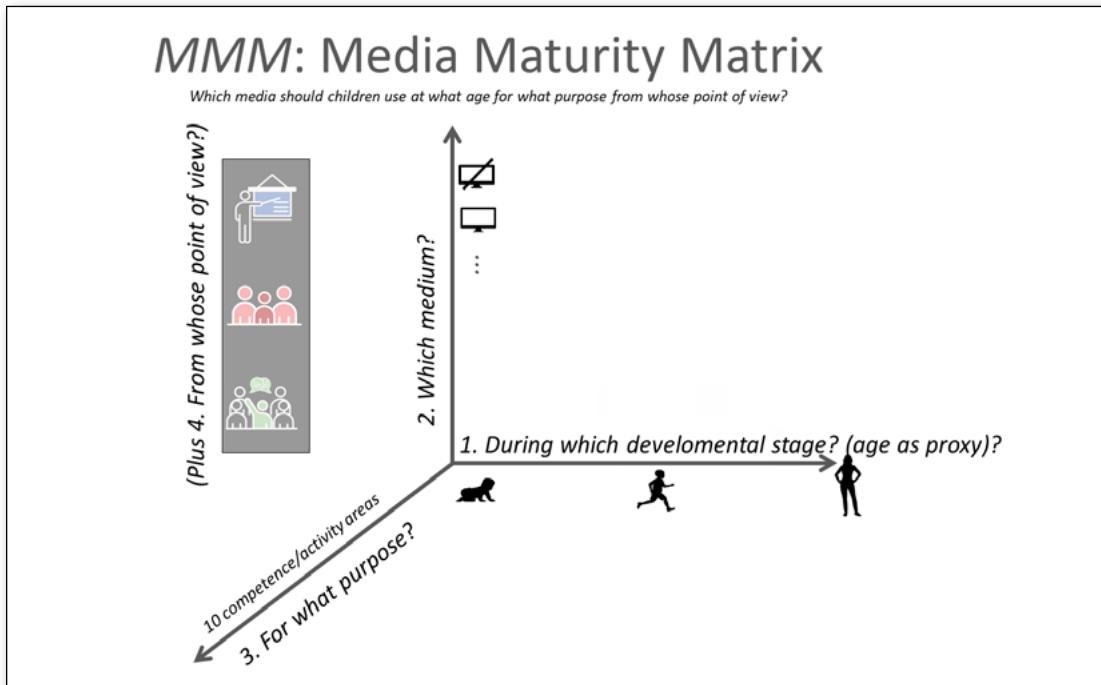


*Figure 4* Survey instrument of the MünDig study "Media Maturity Matrix (MMM)" with three query dimensions:
1. in which development phase (age as proxy)? 2. which medium (with/without screen)?
3. for what purpose? (Plus 4. From whose perspective – teachers, parents, or pupils)?

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16 Four dimensions are described below, whereby only the first three dimensions – stage of development, type of medium, and purpose – are queried by the query instrument itself. The additional dimension – from whose point of view? – is achieved by use of the Media Maturity Matrix with different target groups (teachers, parents and pupils).

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**1. Dimension: In which developmental stage (age as proxy)?** As described in Section 3.1.1, differentiation according to a child's developmental stage is an important query dimension, since both the attitude toward the type of medium and the learning objective depend on the developmental stage of the learner in question. This raises the issue of how a child's developmental stage can be determined. Here, age was chosen as a proxy variable, i.e., representative of developmental stage. A novelty of the *Media Maturity Matrix* was also that all surveyed teachers – independent of their pedagogical field of application – were asked about the age range from 0 to 18 years: Thus, for example, a kindergarten teacher was also able to state his or her attitude toward media education in the upper grades and, conversely, an upper grade teacher was also able to state his or her opinion about media education in early childhood education. This represents a key difference from other survey instruments (cf. et al. Table 2), which address attitudes toward media use only for specific age ranges of children which the ECE and school teachers work with in their practice.

**2. Dimension: Which medium?** Furthermore, the type of medium is distinguished: For the dichotomous, abbreviated query in the domains 1 to 7 as well as in domain 10, a distinction is made between media with and without a screen. At the level of the 60 items, on the other hand, a very large variety of different "media" is mentioned: Pictures on paper, writing on the board, natural and man-made craft materials, flashcards and large posters, flipbooks, picture book cinema, website, learning app, projector, etc.[17] In domain 8, the two-part query distinguishes between two forms of media involving pedagogical parental cooperation – pedagogical vs. technical – and in domain 9, according to "how children are strengthened in life" – as an individual vs. in social interaction.

**3. Dimension: For what purpose/with what learning goal?** With regard to the third dimension to be considered, the learning goal or the purpose of media use, the classification of domains 1 to 6 initially comprises six individual-related competence domains, i.e., skills that children can acquire when using media (*Figure 5*): Produce and Present, Operate and Apply, Solve Problems and Model, Informing and Search, Analyse and Reflect, and Communicate and Cooperate. This classification originates from the media competence framework of the federal state of North Rhine-Westphalia (LVR Center for Media and Education, 2021) and show a large overlap with EU-level systematics such as the Digital Competences Framework (DigComp). The advantage of this subdivision, which is based on overarching purposes, is that it effectively reflects two areas from the Dagstuhl Triangle, media education and informatics education (Brinda et al., 2019). , but at the same time the use can be recorded jointly for different school subjects and independently of the concrete media content, which contributes to the brevity of the survey instrument.

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17 It should be noted that it is not always possible to clearly separate these two types of media, e.g., in the example activity "Disassembling devices": While this may involve devices with screens, it is basically an analogue activity when a screen media device is examined, disassembled or its screws fiddled around with.

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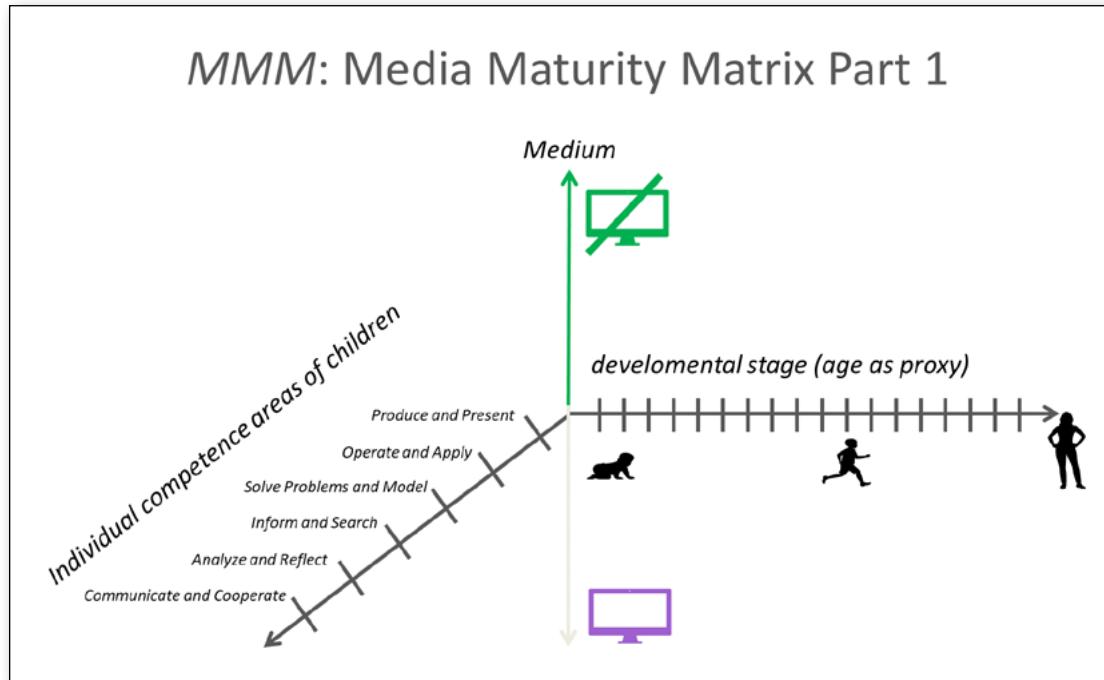
*Figure 5* *MMM: Media Maturity Matrix Part 1 (Domain 1 to 6)*

In addition to these domains, domain 7 queries the use of media by teachers in order to also cover the field of media didactics (third field in the Dagstuhl Triangle, cf. Brinda et al., 2019) in a meaningful way. Because media didactics did not appear to be satisfactorily covered with only six sample items per domain, possible subject-specific media use was also queried in an opentext field. With domains 8 to 10, activity examples are included that refer to further fields of action of media education named as central in the qualitative preliminary studies (cf. Section 3.1.1), which we refer to as setting- and prevention-related fields of action (*Figure 6*). For domain 8 "media-related parental cooperation" and domain 9 "strengthening children in life to protect them from digital risks", other categories are used for a two-part query: Parental cooperation is differentiated according to technical or pedagogical support, and the protection of children from digital risks is differentiated according to the strengthening of children as individuals or in social interaction.

In the first pilot version of the survey instrument, there was an additional 11th domain (use of media with screens for communication purposes by the educational institution), the items of which are shown in *Table 33.* Due to the length of the survey instrument, this area was no longer included in the main survey.

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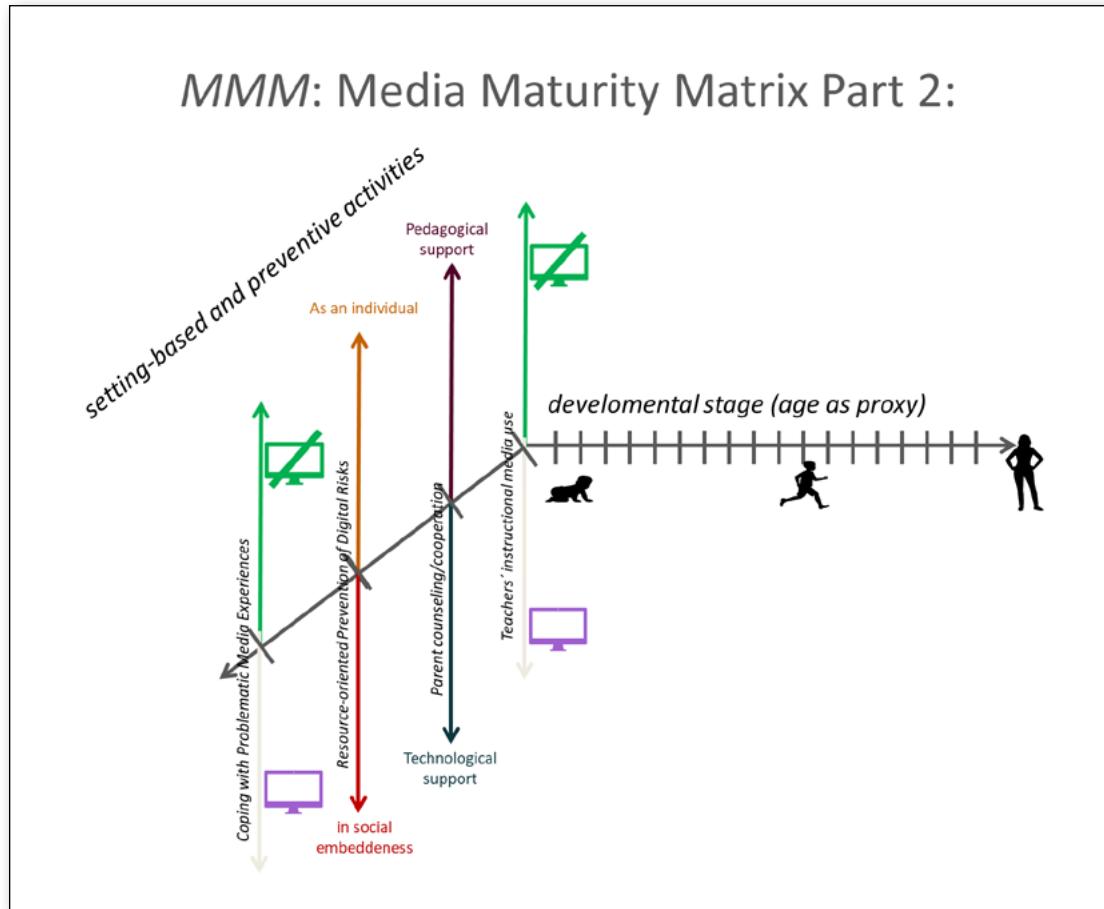
*Figure 6* MMM: Media Maturity Matrix Part 2 (Domain 7-10)

**"Double slide bar" – a new query tool for the quick query of age ranges.** Dominik Leiner, IT expert at Soscisurvey, programmed a new technical representation form for the query of an age range on behalf of the research team of the project "Media Education in Alternative Educational Institutions": the "double slide bar".

*Figure 7* shows what the double slide bars in the *Media Maturity Matrix* looked like for the respondents. The six items from the first competence domain, namely "Produce and Present" are shown as an example.

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**1 of 10:  Produce and Present**

**1. What should children do at what age?**
    **Children...**

Reasonable Age Range:                    not at all
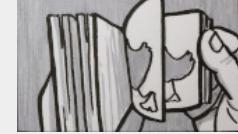
… draw and assemble a flip book

... make a stop motion play-dough movie
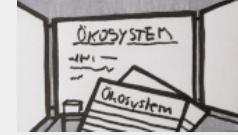
… give presentations with blackboard pictures and/or handwritten index cards
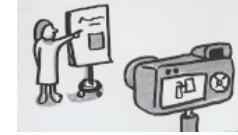
… plan and shoot an explanatory film

… paint or draw pictures on paper
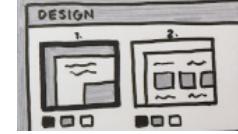
... create a website from scratch (e.g. with Jimdo)

Weiter

Befragung unterbrechen                    19% ausgefüllt

*Figure 7*  *Survey instrument for the Media Maturity Matrix: Quick recording of an age range with double slide bar: screenshot of domain 1 "Produce and Present".*

**Description of the double slide bar.** The basis is a line that ensures both the standardisation of the construct and a differentiated age query. It represents the age range from 0 to 18, i.e., from birth to age of majority, but is not labelled. The query tool, based on a graphical scale, allows for the specification of a starting age or maximum age for each activity example. The age labelling only becomes visible when the respondent selects a start or end age with a mouse click, which can then be "shifted", i.e. changed. Only then is an age range marked by the thick bar between the start and end age. With the further answer option "not at all" on the right side, the respondents can alternatively express a complete rejection of the respective example for any age.

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**Possibility for one-click answers.** When analysing the comments from the pilot survey, a frequent criticism emerged: In many cases, people had only wanted to enter a starting age (left slider) and it would have saved a lot of time if the final age was automatically set to 18 as soon as a starting age was set by the first click. It would still be possible to adjust the maximum age downwards with the right slider, in the few cases in which a different end age seemed to make sense. This was taken into account in the programming of the double slide bar, so that the final age was automatically set to "18 years" as soon as a starting age was clicked. Likewise, the starting age "0 years" was automatically set when a final age was clicked on with the right slider only. In both cases, the automatically set start or end age could still be changed with a second click using the second slider.

**Query by means of illustrated activity examples.** A pool of ten to twelve items per domain was available for selection of the activity examples. This larger selection as well as the six to nine items per domain actually used in the MünDig study are presented in detail in Chapters 6.1-6.10 as text as well as illustrations.

The first test persons complained that the questionnaire seemed too long and repetitive, which led to a loss of motivation and thus to an end to participation. As a reaction to this, the scientific advisory board suggested increasing the motivation of the respondents by enhancing the text of each of the 60 activity examples with a hand-drawn illustration (*Figure 7*) . An additional advantage of the illustration was that in some cases the item texts could be shortened. The use of graphics in quantitative survey instruments is still rarely implemented despite some advantages (Bandilla, 2015; Couper, 2008), whereby a uniform design of the graphics is important in order not to influence the response behaviour (Witte et al., 2004). Therefore, Sophie Olligschläger, a student at Alanus University, was commissioned to prepare different illustration drafts in the same black-and-white drawing style for all items from the final selection, from which the final illustrations were then selected (for image rights, see p. 419). This also ensured that the item description generated a consistent understanding of the example activity among respondents. For example, the item "Children draw or paint a picture" could possibly elicit different suggestions from respondents who could understand this to mean different things, e.g., image editing using software, touchpad using pen, drawing using pen and paper. The visual representation made it possible to avoid such misunderstandings by depicting the intended concrete activity, in this case drawing a picture with pen and paper.

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## 3.2 Data collection

## 3.2.1 Sampling

The study is designed as a Germany-wide, non-representative study aimed at educational professio-nals, parents of children at alternative educational ECE settings/kindergartens and schools (Waldorf education, Montessori education, forest and nature education) as well as older pupils attending such institutions. In order to reach as broad a group of potential respondents as possible, lists of all Waldorf schools or Waldorf kindergartens in Germany, including contact details (e-mail address and telephone) were provided by the cooperation partners (Waldorf survey: *Bund der Freien Waldorfschulen, Vereini-gung der Waldorfkindergärten*). The invitation letters for study participation could be sent out based on these lists (an example of the cover letter for Waldorf kindergarten teachers or parents can be found in the appendix in Section 3.2.1) and additional telephone calls could be made to the majority of these institutions in order to increase motivation to participate. The telephone conversations were structured with predefined formulations based on a guideline (see appendix in Section 3.2.1), with a query concer-ning the status of digital media equipment in the respective facility. If an educational institution could not be reached, a message was left on the answering machine, if possible. In addition, the start of the study was announced in press releases (for an example, see Section 3.2.1 in the appendix). In a further step, standardised reminder e-mails for participation were sent out.

*Figure 8* shows an overview of the total sample: The survey at schools was carried out in Montessori as well as in Waldorf schools. Teachers, parents and pupils (16 years and older) were surveyed. The ECE setting survey was again conducted in respective facilities with three different alternative pedagogical approaches: Montessori, Waldorf, and Forest and Nature. Here, the ECE staff as well as parents were surveyed.
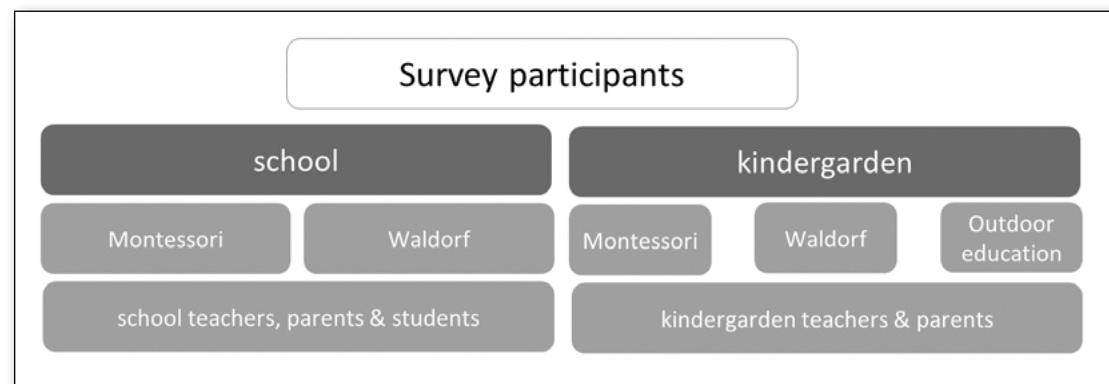


**Figure 8**  *Overview of the respondent groups in the MünDig study*

In order to be able to do justice to the differences between schools and ECE settings as well as to the variation of target groups, the authors created different formulations in questions or instructions at some points in the questionnaire. Thus, five versions of the MünDig questionnaire were created:
• Questionnaire for pedagogical staff at ECE settings
• Questionnaire for teachers at schools
• Questionnaire for parents with children attending ECE settings
• Questionnaire for parents with children at school
• Questionnaire for pupils

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There were no differences in content between the survey of ECE staff and teachers and between ECE setting parents and school parents.[18]

Further information on the questionnaires, e.g. if you are interested in using the survey instrument of the MünDig study for other target groups, can be requested at medienmuendig@alanus.edu.

## 3.2.2 Conducting the survey

**Online survey tool.** The survey was conducted using the web application "Soscisurvey[19]", a software for online surveys developed in Germany.

**Survey period.** The main survey of the MünDig study started in the Waldorf and Montessori educational facilities in September 2019 and ended after three months in December 2019. Subsequently, forest and outdoor kindergartens were surveyed in February 2020. A specific link for each individual educational institution was used in the survey to allow for an analysis of results for one kindergarten or school as well as comparison of results from institutions with high participation rates compared to those with low participation rates. In addition, the specific links were used to motivate an increase in participation: the three institutions with the highest participation rate received as a "prize" the offer of a free event (parent lecture or training event for professionals of choice) by the team of Alanus University or the Free University of Stuttgart.[20]

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18  However, there were minor differences in the wording (often: "children" in the ECE setting questionnaire and "pupils" in the school question-naire; often: "during daycare time" in the ECE setting questionnaire and "during lessons" in the school questionnaire).

19  https://www.soscisurvey.de/ (accessed 04/03/2022).

20  Several "wins" have already been redeemed, but due to the COVID 19 pandemic, implementation has dragged on until 2022.

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# 3.3 Data analysis and evaluation procedures

The analysis of the collected data set was carried out with the help of the statistical and analysis software SPSS[21] and partly with the statistical software PSPP.[22] The graphical processing of the results was mainly executed with the Microsoft program Excel.

After completion of the survey (see Section 3.2.2), five data sets were available (ECE setting staff/teachers data set, teachers data set, ECE parents data set, school parents data set and pupils data set). These were first merged in SPSS before the analysis. The results are now available for all teachers from ECE settings to high school in one data set, as well as for all parents from ECE settings to high school in another data set.[23] During the merging process, the data set was cleaned and missing values were assigned, e.g., due to formal logical errors and inconsistent data.

**Procedure for assigning the parents and teachers surveyed to one of six age categories.** After merging the data sets, an additional variable was generated based on the information about the age of the child or the children in ECE settings, which indicates the assignment to one of six age categories: under 3, over 3, grade 1-3, grade 4-6, grade 7-9, grade 10--13. The procedure for this assignment is described below, first for the parents, then for the teachers.

**Parents: generation of the age category variable.** The research team decided that children would basically be assigned to age groups of three years each: under 3 (0-3 years), over 3 (4-6 years), grade 1-3 (7-9 years), grade 4-6 (10-12 years), grade 7-9 (13-15 years), and grade 10-13 (16-18 years). One challenge was that asking the age of the children was not done in the same way for the ECE parent and school parent surveys: for ECE parents, the age of the youngest child was asked (with a dropdown selection of ages "under 1 year", "1 year", ..., "6 years" as well as "older than 6 years"). School parents, on the other hand, were asked about the grade the youngest child attends (with a dropdown selection from "1st grade" to "13th grade," which also included the option "across grades, and that is" with the possibility of an open text addition). This information was edited as described below to still generate an age category variable with comparability across all data sets. In both the empirical survey and the data analysis and description of results, grades 10-13 are referred to as "upper grades." This ensures the comparison of age groups or grades with each other in the above-mentioned groups of the same size (grades 1-3, grades 4-6, grades 7-9, grades 10-13), even if, for example, at Waldorf schools the 9th grade is already counted as an upper grade or not all of the schools surveyed offer a 13th grade. The term "upper grade" is sometimes used differently in the alternative educational institutions surveyed. We refer here to grades 10-13 for a uniform processing of results with the term "upper grade."

• Six- and seven-year-old children: Six-year-olds and children whose parents stated that they were "older than 6" at the time of the survey were assigned to the over 3 age category if they came from the ECE setting survey. If the parents indicated "grade 1" in the school survey, then the respondent was assigned to the "grade 1-3" category, although the age is also likely to be six to seven years.

• Age group grades 10-13: Compared to the other age groups, this age group includes an additional year, which seemed reasonable because not every school has a 13th grade, so that three years would be combined with grades 10, 11 and 12.

Optionally, it was considered whether only cases with an unambiguous possible assignment should be used (i.e., kindergarten children of six and seven years should not be assigned to any category) or whether age groups of always seven years (0-7 years, 8-14 years, 15-21 years) should be formed. These solutions were not considered to be effective, since in the first case there would have been many missing responses for the 6 to 7 years age group (see reason above), resulting in a substantial loss of data from the survey, in the latter case the age groups would have been very large and thus the advantage of age-specific analysis would have been largely lost.

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21 https://www.ibm.com/de-de/analytics/spss-statistics-software (accessed 04/03/2022).

22 https://www.gnu.org/software/pspp/ (accessed 04/03/2022).

23 In each case, two variables were merged into one variable based on the same questions with minimal formulation differences.

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**Generation of the age category variable for teachers.** For the teachers (both ECE pedagogical staff and school teachers), on the other hand, an age range rather than the age of an individual child was queried:[24] The teachers could indicate which age range they worked with at the time of the survey, e.g. 4-6 years. For these statements, the mean of the two age statements was calculated and this was then assigned to the respective age categories described above. Here is the rule for assigning to age categories for each possible mean value from 0 to 18 years: under 3 (0-3 years), over 3 (3.5-6 years), grade 1-3 (6.5-9 years), grade 4-6 (9.5-12 years), grade 7-9 (12.5-15 years), and grade 10-13 (15.5-18 years).

**Evaluation of the query on the implementation of media education practice according to information provided by teachers (double slide bar).** The detailed query of practice with a second "double slide bar" question "Which activities do you put into practice in which age range?" following the attitude question "Which activities do you consider suitable in which age range?" was not asked in the teachers' questionnaires for all ten domains of specialisation, but only for three randomly determined domains.[25] For this report, the analysis of the information on the question was carried out separately for each of the six age categories mentioned (under 3, over 3, grade 1-3, grade 4-6, grade 7-9, and grade 10-13). Some of the practice slide rule curves from older publications differ significantly due to the evaluation method used at that time (et al. Streit, 2022). [26]

*Table 4* summarises further methodological notes and special features of the evaluation at a glance:

| | |
|---|---|
| Rounding differences | Rounding may result in minor differences which are not discussed in detail. Percentage values are generally presented without decimal places. |
| Deviations from previous publications of MünDig results | Due to different evaluation steps and the focus of the presentation of results, there may be isolated deviations from previous publications of the results. For example, when presenting the results of the question „Which activities are suitable?" in the past, the indication „not at all" was not included in the figures. |
| Age information in open text fields | If age information was requested by means of an open text field and entries were made that could not be clearly assigned (e.g. 137), these were corrected. If attributable age data were entered (e.g. 66=6, 1212=12), these were corrected. |

**Table 4** *Methodological notes and special features of the evaluation*

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24 Question wording for school: "What age are the pupils you currently teach most often?" Question wording for ECE setting staff: "At what age are the children you currently care for most often?" (answer choice: "Between x and y years"; free entry in two separate fields).

25 The reason for the random selection from three of ten domains was the otherwise significantly longer survey duration, which was calculated at 70 minutes for this case. Question wording: "ATTENTION - ADDITIONAL QUESTION FOR DEPTH: This is one of three domains in which we would like to hear from you not only your assessment of what you consider meaningful (previous page). We additionally ask which of these illustrated activity examples you actually implement in the kindergarten and group context (school: ... in the school and classroom context)."

26 In the older publications, the data were analysed together for the entire sample, so that information from respondents was also included that referred to age groups in which some respondents were not themselves active. In this case, the values had to be very low, because the percentage value was calculated by dividing by the number of all those respondents who had been assigned the in-depth question in the first place. However, it is more precise - and this has now been taken into account in this publication - to take into account only the responses of people who are actually active in the age group in question, and then to divide only by the number of those who had been assigned the in-depth question from this age group. As a result, the percentage values are higher, but the number of cases per data point in the figure is still significantly lower, namely on average by a factor of 30 lower than in the previous figure ("What makes sense? "), which explains the jumps and irregularities in the curve that occur in some cases.

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*Table 5* describes conventions and special features of the reported results.

| | |
|---|---|
| Partial presentation of results of the total sample | This report presents the descriptive results of the survey of teachers and parents at Waldorf educational institutions. The results of the pupil survey at Waldorf educational institutions are published in a short separate report. In those places in the report where the results of the overall survey of the MünDig study (Waldorf, Montessori, forest and nature-based educational institutions) are all reported, such as in Section 7.2, this is explicitly mentioned. |
| Presentation of results of the detailed questions „Which activities are suitable?" and „Which activities are put into practice?" with activity examples | In addition to each graphical representation of the results for the questions that were asked with the double slide bar (see Section 3.1.2), a table is included in which the following information is listed for each play activity: The number of valid answers (n), the number of „not at all" answers, the number of missing values, and whether the item was asked in ECE settings or schools or in both survey groups. |
| Open text fields | In total, the survey of teachers contained six open text fields, the survey of parents three, and the survey of pupils two. More detailed information can be found in the appendix in Section 3.3. The entries from most of the fields are presented in Chapters 7 and 8. This was handled differently for the open text field at the end of the survey: Here, a large number of entries were made with a different thematic focus, so that the entries are summarised in many different, thematically appropriate places in the report. |

**Table 5**  *Methodological notes and special features of the presentation of results*

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# 3.4 Methodological reflection and critique

Finally, after the survey instrument, the acquisition of participants and the data analysis procedure have been explained, the survey instrument will be subjected to a methodological reflection. This involves both the perspective of the research team and that of the respondents or their feedback in the open text field at the end of each questionnaire.[27] In the following, feedback from respondents is first summarised regarding the questionnaire in general, and then for the in-depth area of the study – the *Media Maturity Matrix*.

**Feedback from respondents on the survey instrument in general.** Some participants of the parents' and teachers' survey (main survey[28] ) made comments on the scope of the questionnaire in the open text field at the end. Here, it was predominantly reported back that the survey had been too extensive (n=10), whereas other respondents emphasised as positive the differentiated survey (n=3): *"At least you included important topics, that was also stimulating for me [...]"*. Feedback also came from surveyed parents and teachers that it had been a challenge for them to provide information across age 0 to 18, either due to a lack of pedagogical experience (*"many points are not clear to answer as a beginning teacher of a lower grade"*) or due to a lack of insight into pedagogical work in other age ranges (*"I only teach young people from 9th grade on. However, many of the questions only apply to younger children"; "It was sometimes difficult to answer the questions because they did not relate much to the age group from my work (ECE/daycare)"* (n=16). In addition, respondents (n=6) expressed that it would have been challenging for them to provide cross-disciplinary answers because of their subject-specific work, e.g., as a subject teacher (*"As a physical education teacher, it was difficult to answer the questions in a meaningful way"*). Furthermore, feedback was received from respondents (n=3 on the differentiated nature of the survey instrument (*"good and very differentiated", "I think the survey in its current form is a good starting point"; "In my opinion, one of the major challenges is the levelling of the differences between children, young people and adults through similar and undifferentiated media use"*). Furthermore, some question formulations or answer options were criticised by the respondents (n=3).

**Reflection on methods in relation to the *Media Maturity Matrix*.** Overall, the respondents' acceptance of the *Media Maturity Matrix* is high: for example, 68% of[29] 670 participating teachers and 79% of 3350 participating parents, took part in the double slide bar query on the question "What is useful?" of the Producing and Presenting section (Chapter 6.1, *Figure 32, Figure 38*). In the last competence area ("Processing stressful media experiences", Chapter 6.10, *Figure 96, Figure 99*), the response rates had only dropped by 22%: Here, 452 teachers (46%) gave their answer about which example item they would find suitable or unsuitable at which age. And, 1803 parents (43% of the parents) did so. These average values show that the survey using the double slide bar did not lead to a very high dropout rate among the teachers and parents surveyed, despite a very long processing time for a quantitative survey of more than half an hour.

With regard to the in-depth area of the MünDig study – the survey using a double slide bar – it should first be pointed out once again that there were differences between the ECE setting and school surveys in the sample items queried for the respective competence domains, in order to be able to make activity examples that are precisely tailored to the respective age of the target group. It should be noted that there are some anomalies in this differentiation, for example in domain 5 "Communicate and Cooperate": Here, the item "Children express their opinions publicly on the Internet" was asked in both the ECE setting as well as the school survey, whereas the item "Children express their opinions publicly (e.g., demonstrating, writing letters to the editor)" was only included in the school survey. Here it can be discussed whether the second item might have a clearer relation to the pedagogical everyday life in ECE settings than the first one. Further discussions of the results of the in-depth section (cf. Chapters 6.1-6.10), some of which include methodological discussions (e.g. on the item descriptions), can be found at the end of each chapter:

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27 The wording was: "Is there anything else you would like to say about this survey? For example, were there any unclear questions or did you miss anything?"

28 In distinction to the pilot survey described in section 3.1.1. The comments from the pilot survey are not included here because they have already been incorporated into the further development of the survey instrument.

29 Cumulative values of responses to the question "What makes sense?" as well as "not at all" responses on average, measured by the total number of those teachers/parents who had at least answered the filter question about the pedagogical orientation of their educational institution.

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- Chapter 6.1: Discussion of the item selection related to possible generalisation/concretisation of the example items
- Chapter 6.2: Discussion of the item description "Learn to type using 10 fingers": Is the focus on the activity or on learning the activity?
- Chapter 6.4: Discussion of the age range of the items
- Chapter 6.5: Discussion about possible different understandings of the references of the item descriptions
- Chapter 6.7: Discussion about the strong media-didactic focus of the sample items, since only intended screen media use is queried
- Chapter 6.10: Discussion of possible different understandings of the reference of the item descriptions.

**Feedback from respondents.** In the in-depth area, isolated feedback was given with regard to the query. In terms of content, some respondents noted that the age specification (in some areas) was difficult for them (n=2: *"In the item concerning help for processing stressful media education, I found it difficult to specify a specific age. If a child needs help, he or she should get it, regardless of age."*). Some respondents also reported that limiting the age range to 18 was not helpful for some respondents (n=6):

> *"I have also often not operated the right-hand slider, which indicates an upward limit, because I have made the experience that there is no age limit on this. For example, if a person has had a bad experience with digital media, it does even an octogenarian good to talk to someone about it or to work through the issue by painting or some other craft. Likewise, real-life activity in the community in sports and games is beneficial at any age. For me, there's no age limit for that."*

In addition, formal and organisational challenges, for example, problems with formulations and definitions for the categories "media without screen" and "media with screen" were mentioned (n=5), such as to what extent books are counted as media and that this medium had been given too little space in the study. There were also difficulties with terminology (n=8), e.g. what exactly is meant by "modelling" or whether round dance could be understood as role play in Waldorf institutions. Furthermore, some technical problems with the double slide bar were mentioned, but these were solved shortly after the start of the survey. There was also feedback that the online query on the smartphone had not been very user-friendly. For example, five respondents described problems with the display (% instead of years) and the operation of the double slide bar, which may be related to the use of older browser versions (*"I found it confusing that the age information was not displayed in years for me, but in % (percent). But I treated it as if it were years of life; partly you couldn't see the numbers on the scale correctly because of the dark background."*). One comment referred to the illustrations of the items in the in-depth section (*"the little pictures were cute, but I felt they might influence the respondent in their answer."*)..

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# 5. Overarching results on media education at Steiner Waldorf institutions

While Chapters 6.1 to 6.10 deal individually and separately with each of the ten in-depth domains of the *Media Maturity Matrix* ("MMM", cf. Section 3.1.2), this Section 5 presents the results on all ten competence domains in an overview and offers a preview of the structure of these chapters. Chapters 6.1 to 6.10 can be read in different ways, both as a pigeonhole system and as inspiration for practice, as an attitudinal barometer to compare expectations between educators and parents, and as documentation of implemented practice. Reading the introductory theory section for each domain also creates opportunities for questioning and expanding common scientific concepts in the context of media education. A brief explanation of some of the keywords mentioned:

**"Pigeonhole system":** Sections 6.1 to 6.10 of the report can be used to apply all or part of the systematics of the ten in-depth domains to structure a media curriculum for an educational institution.

**"Inspiration for practice ":** The first pages of each Chapter (6.1 to 6.10) can be used as support or inspiration for pedagogical practice, as can the extended item pool that can be found in each chapter at the end of the theory section. For this reason, we not only present the items used along with graphics, but also provide a brief insight into what kind of activity is encompassed by the items, along with further literature references. The six to nine graphics shown on the first page of each chapter in the results section can also be understood as an invitation to re-contextualize certain activities that teachers already put into practice as important contributions to media maturity education.

**"Attitude barometer":** The results section of each chapter serves to compare the media education attitudes of parents, educators and pupils. Time and again, there is a high degree of agreement between the ideas of educators and parents regarding the question of which medium should be used at which age.

## 5.1 Preview: Ten domains of media education

Page 59 shows the Media Competence Framework NRW, with six competence domains, each of which is divided into four sub-competences. This structure forms the basis for the structure of domains 1 to 6 in the Media Maturity Matrix (see Section 3.1.3). In addition, domain 7 asks about the use of media by teachers, and domain 8 deals with various aspects of parental cooperation. Finally, domain 9 deals with the topic of "Empowering children in real life to prevent digital risks," (in other words: fostering digital resilience) and the final domain 10 deals with helping children cope with and process stressful media experiences.

**Comparing DigComp to Media Competence Framework**
In the MünDig Study, the Northrinewestfalian Media Competence Framework ("Medienkompetenzrahmen") was employed, because it is one of the most comprehensive models in the German context that has been used as a basis for similar frameworks in other German federal states and fits well with the European Digital Competence Framework. The figure below shows an overview of all DigComp domains and subdomains.

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1.1. Browsing, searching and filtering data, information and digital content
1.2. Evaluating data, information and digital content
1.3. Managing data, information and digital content

**Communication and collaboration**
2.1. Interacting through digital technologies
2.2. Sharing information and content through digital technologies
2.3. Engaging in citizenship through digital technologies
2.4. Collaborating through digital technologies
2.5. Netiquette
2.6. Managing digital identity

**Digital content creation**
3.1. Developing digital content
3.2. Integrating and re-elaborating digital content
3.3. Copyright and licences
3.4. Programming

**Safety**
4.1. Protecting devices
4.2. Protecting personal data and privacy
4.3. Protecting health and well-being
4.4. Protecting the environment

**Problem solving**
5.1. Solving technical problems
5.2. Identifying needs and technological responses
5.3. Creatively using digital technologies
5.4. Identifying digital competence gaps

The following table shows how the different components and subcomponents of the DigComp Framework map onto the German Framework which was used to structure the MünDig Study Questionnaire. Interestingly, two components (No. 1 and 2) in DigComp map quite precisely to a similarly-named domain in the Media Competence Framework. One component, namely Digital content creation (No. 3) encompasses two domains from the German model ("Produce and Present" domain as well as the "Solve Problems and Model" domain). The DigComp Safety Component (No. 4) maps onto all the last subdomains (1.4, 2.4, 3.4, 4.4, 5.4, 6.4) in the German model, since they refer to legal and safety aspects in each specific domain of media use. The last DigComp component, namely Problem Solving (No. 5) is the component with the lowest direct correspondence to the German Framework. The last domain in the German model (Analyse and Reflect) does not have a direct correspondence in DigComp.

| DigComp | Media Competence Framework NRW |
|---|---|
| 1 Information and data literacy | 2. Search, judge and organize information |
| 1. Operate and Apply | |
| 1.1 | 2.1; 2.2 |
| 1.2 | 2.2; 2.3; 5.2 |
| 1.3 | 1.2; 1.3 |
| 2. Communication and collaboration | 2. Communicate and Cooperate |
| 2.1 | 3.1; 1.2 |
| 2.2 | 3.1; 4.1 |
| 2.3 | 3.3 |
| 2.4 | 3.1 |
| 2.5 | 3.2 |
| 2.6 | 5.3 |
| 3. Digital content creation | 4. Produce and present 6. Solve Problems and Model |
| 3.1 | 4.1; 4.2 |
| 3.2 | 4.1; 4.2 |
| 3.3 | 4.3; 4.4 |
| 3.4 | 6.1; 6.2; 6.3 |
| 4. Safety | 1. Operate and Apply plus all last row (x.4) in all domains |
| 4.1 | 1.1; 1.3; 1.4 |
| 4.2 | 1.4; 3.4; 4.4 |
| 4.3 | 2.4; 3.4; 5.3; 5.4; 6.4 |
| 4.4 | (1.1; 1.2) |
| 5. Problem solving | 6. Solve Problems and Model 1. Operate and Apply |
| 5.1 | 1.1; 1.2; 6.1; 6.3 |
| 5.2 | 1.2; 5.1; 6.3 |
| 5.3 | 4.1; 4.2 |
| 5.4 | - |
| Not explicitly covered | 5. Analyse and Reflect |

| 1. OPERATE AND APPLY | 2. SEARCH, JUDGE, AND ORGANISE INFORMATION | 3. COMMUNICATE AND COOPERATE | 4. PRODUCE AND PRESENT | 5. ANALYSE AND REFLECT | 6. SOLVE PROBLEMS AND DO MODELLING |
|---|---|---|---|---|---|
| **1.1 Media equipment (hardware)** | **2.1 Information research** | **3.1 Communication and cooperation processes** | **4.1 Media production and presentation** | **5.1 Media analysis** | **6.1 Principles of the digital worlds** |
| Know, select and use media equipment (hardware) in a reflective way; handle it responsibly. | Conduct targeted information searches and apply search strategies in the process | Use digital tools to design communication and cooperation processes and share media products and information. | Plan, design, and present media products in an appropriate way for the target group; know and use possibilities of publishing and sharing. | Know, analyse, and reflect on the variety of media, their development, and their significance. | Identify, know, understand, and consciously use basic principles and modes of operation of the digital world. |
| **1.2 Digital tools** | **2.2 Information analysis** | **3.2 Communication and cooperation rules** | **4.2 Elements of design** | **5.2 Formation of opinion** | **6.2 Recognise algorithms** |
| Know and select different digital tools and their range of functions and use them creatively, reflectively, and purposefully. | Filter, structure, transform, and prepare topic-relevant information and data from media offers | Know, formulate, and comply with rules for digital communication and cooperation | Know and reflectively apply elements of design in media products and assess them with regard to their quality, effect, and intended message. | Recognise the interest-driven setting and dissemination of topics in the media and assess them in relation to the formation of opinion. | Recognise, understand, and reflect on algorithmic patterns and structures in different contexts. |
| **1.3 Data organisation** | **2.3 Information evaluation** | **3.3 Communication and cooperation in society** | **4.3 Source documentation** | **5.3 Formation of identity** | **6.3 Modelling and programming** |
| Securely store, retrieve, and access information and data from different locations; summarise, organise and store information and data in a structured way. | Recognise and critically evaluate information, data, and their sources as well as the strategies and intentions behind them | Shape and reflect communication and cooperation processes to promote active participation in society; observe ethical principles as well as sociocultural norms. | Know and apply standards for citing sources when producing and presenting one's own and other people's content. | Recognise and analyse the opportunities and challenges of media for perceiving reality and use them for one's own personal identity formation. | Describe problems in a formalised way, develop problem-solving strategies, and plan a structured, algorithmic sequence for this purpose; also implement this through programming and evaluate the solution strategy found. |
| **1.4 Data protection and information security** | **2.4 Information critique** | **3.4 Cyberviolence and criminality** | **4.4 Legal basis** | **5.4 Self-regulated media use** | **6.4 Significance of algorithms** |
| Deal responsibly with personal and external data; observe data protection, privacy, and information security | Recognise inappropriate and harmful media content and assess it in terms of legal principles and social norms and values; become familiar with youth and consumer protection and make use of help and support structures. | Identify personal, societal, and economic risks and impacts of cyberviolence and crime and know and use respective contacts and response options. | Examine, evaluate, and comply with the legal regulations on personal rights (including image rights), copyright, and rights of use (including licenses). | Describe media and their effects, reflect critically and regulate their use in a self-responsible way; support others in their use of media. | Describe and reflect on the influence of algorithms and the impact of automation of processes in the digital world. |

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# 5.2 Overview results of teacher survey: What is implemented?

The following is an overview of selected results from the **teacher** survey. Which activity examples from the ten MünDig domains the professionals consider **suitable for** which age groups is not covered here, but is presented separately for the ten domains in Chapters 6.1 to 6.10. Only the **practice of implementation is presented** here in a comparison between all ten MünDig domains, namely through a comparison of two disparate groups: answers from teachers working with kindergarten age children (three to six years) contrasted to those from teachers in the upper grades (grades 10-13).

**Practice in the kindergarten.** Figure 26 shows that, according to teachers and staff at Steiner Waldorf kindergartens, there is only one domain of media education, namely "Empowering children in real life to prevent digital risks", that is implemented very often. More than three quarters of the respondents state that they implement such activities very often, and nearly 100% do so at least "somewhat often". More than half of the responding kindergarten teachers say they implement pedagogical support for parents in media education rather often or very often, whereas technical support (e.g., in installing time limit and filter software) is "not at all" implemented by seven out of eight respondents. In the domains that were recorded separately according to activities with or without the use of digital screen media, the values for activities without screens are consistently considerably higher. Still, children´s non-screen media activities (i.e., the six green bars in the domains mentioned on the left in Figure 26) are reported to be carried out "often/very often" according to less than half of the respondents in any of the six domains. At kindergarten age, children use screens very rarely or "not at all" as they engage in activities during childcare hours: Consistently, more than nine out of ten respondents do not encourage or observe these activities by children at all during childcare hours in kindergarten. The high purple bar in the domain of "help processing media experiences" is an exception. However, it is most likely due to a misunderstanding: Presumably, the teachers and staff surveyed did not understand the phrase "processing media experiences with screens" to mean what was intended by the researchers(that they use screen media in the kindergarten to help children process media experiences), but rather that children´s stressful experiences that need to be processed originate from the screen.

**Practice in high school (grades 10-13)**. The comparison between Figure 26 and *Figure 27* (data from teachers in upper grades) shows that in the competence domains 1 to 7, more media education is put into practice in the upper grades. This applies both to the use of media without screens by the pupils and the teachers - here the use increases moderately - and to the use of screen media by the teachers and the pupils, which shows a dramatic increase compared to kindergarten age. Digital screen media are used most frequently in the upper grades for activities in the domain of searching, judging and organizing information. Even in the upper grades, there is no domain in which the use of digital screen media is more frequent than the use of non-screen media. Somewhat less frequently than the kindergarten teachers, the upper school teachers state that they implement activities that empower children in life to prevent digital risks. Nevertheless, this domain is still the one in which "rather often" or "very often" implementation occurs most frequently compared to other domains. In the domain „Media-related Parent Counselling and Cooperation", there are no major differences compared to kindergarten age. Technical assistance for high school parents, while not frequent, is implemented significantly more often compared to kindergarten age. In the case of "help in processing stressful media experiences," the smallest differences compared to kindergarten age emerge, but the same misunderstanding of the wording described above for the kindergarten results cannot be ruled out here either.
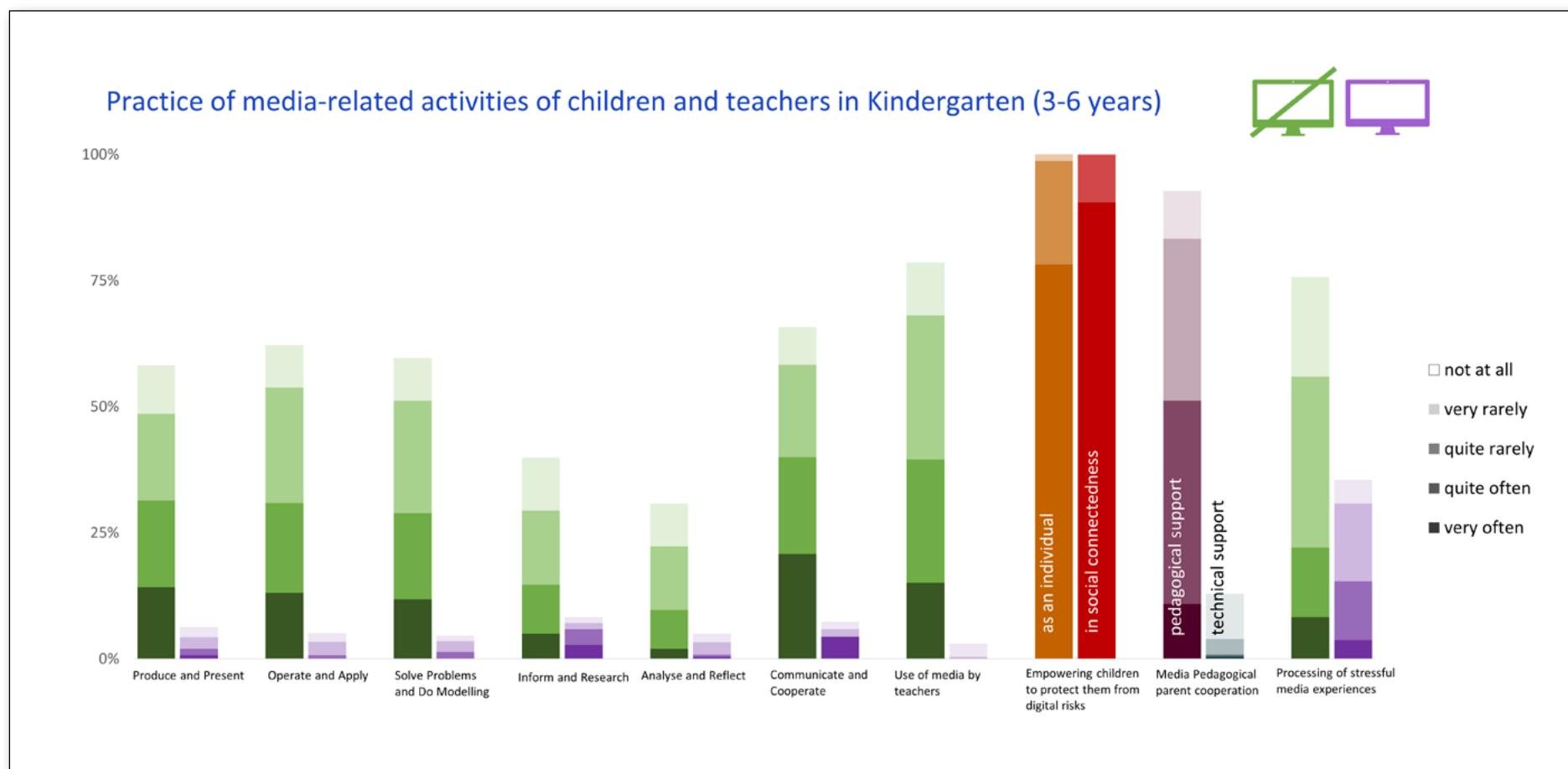
**Figure 26** *Frequency of putting media-related activities into practice in the ten MünDig domains by children/staff during childcare hours in Steiner Waldorf ECE settings as reported by the teachers (3 to 6 years), n=214-303*
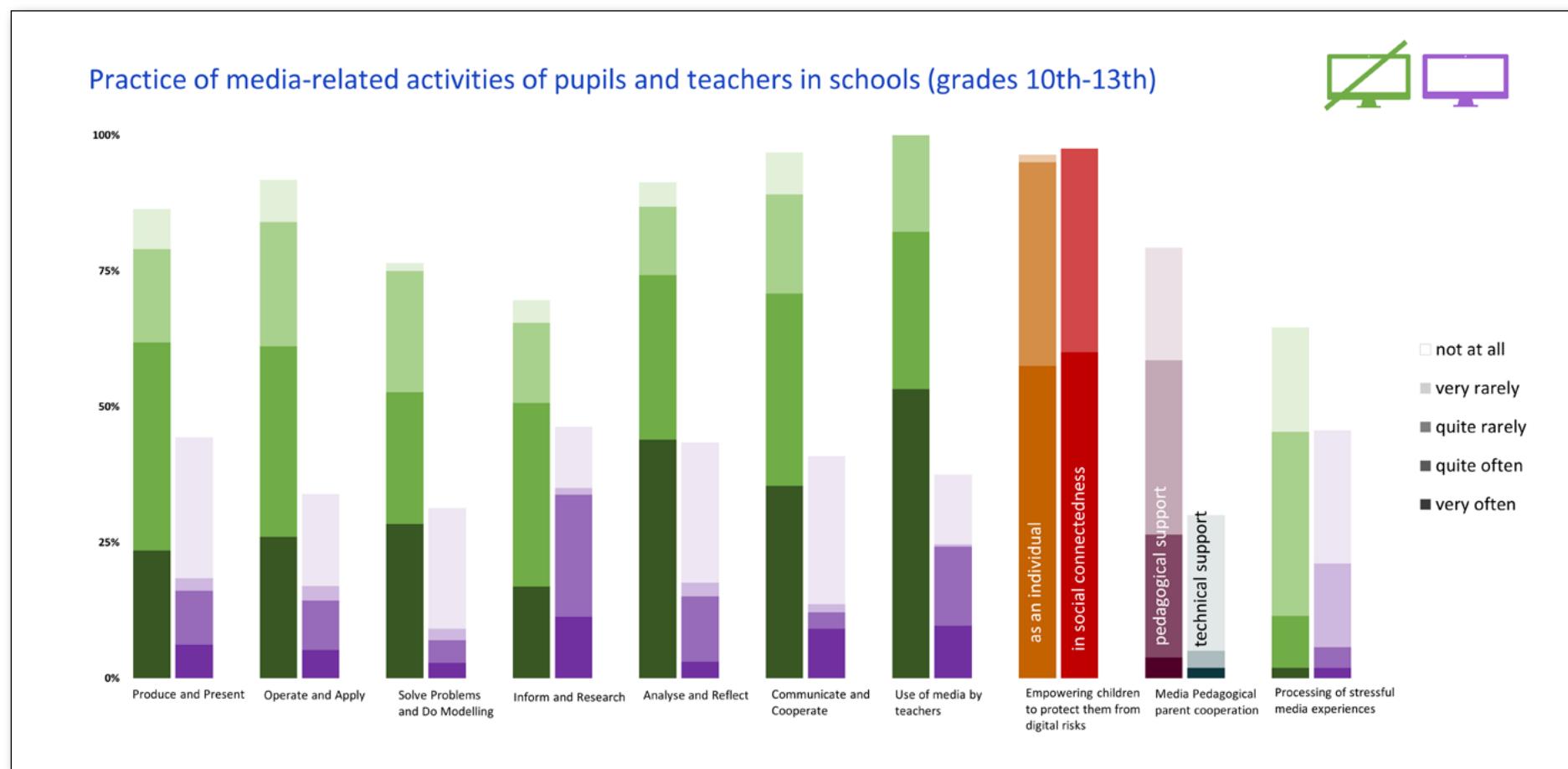
**Figure 27** *Frequency of putting media-related activities into practice in the ten MünDig domains by pupils/teachers in the upper grades at Steiner Waldorf schools as reported by teachers (10th-13th grade), n=40*

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## 5.3 Overview Results of Parent Survey: Satisfaction with their institution´s media education practice

The information provided by Steiner Waldorf parents on their overall satisfaction with media education or the promotion of media maturity at their educational institution is found in *Figure 2*8 (ECE setting) and *Figure 29* (school). Shown here are the results of parental satisfaction in four main domains of media maturity education. The overall satisfaction with the way this is put into practice at their child´s educational institution is the satisfaction recorded for the "promotion of media literacy[41] through…

• …the use of media without a screen (green bar),

• …the use of media with screen (purple bars),

• …cooperation with the parental home (red bars, for more details see chapter 6.8) and

• …a pedagogy that supports critical and independent thinking and action (blue bars).

**Results on Steiner Waldorf parents' satisfaction in ECE settings (overall satisfaction).** Nine out of ten or even more Waldorf kindergarten parents are consistently "rather satisfied" with the practice in all four overall areas of media education, with about half of the respondents giving the rating "very satisfied", both in the 0-3 years and the 3-6 years age groups (*Figure 28)*.

More than eight out of ten parents are satisfied with the use of media with screens (purple bar) (figures "very satisfied" and "somewhat satisfied" combined), which, when compared with Figure 26 can only mean that they are satisfied with the fact that digital media are not used. Waldorf parents give the lowest, but still widespread, satisfaction rating to the main domain of "media-related parental counselling and cooperation," which we will examine in more detail in Chapter 6.8.

The maximum value for the rating "not very satisfied" is given at around 10% in the age range 0-3 years and 3-6 years for each of the domains "media use with screen" (purple bar) and "parental cooperation" (red bar). The highest value of "not at all satisfied" in the ECE settings is around 4% in the main domain of "use of media with screen". In the other three domains, a maximum of 1% (0-3 years) and a maximum of 2% (3-6 years) of respondents stated that they were "not at all satisfied".

In summary, it can be said that Waldorf parents are satisfied to very satisfied with the promotion of media maturity in their child's ECE setting.

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41  Exact question: "Now let's ask again in more general terms: How satisfied are you with the media education at your child's school in terms of the following overarching aspects: As I said, we understand media maturity to be a person's ability to take advantage of digital opportunities and avoid digital risks (such as media addiction).
Promote students' media maturity in the long term through …". (Response options: "very satisfied", "rather satisfied", "rather not satisfied", "not satisfied at all").

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8. Fort/Weiter- bildungsbedarf

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**Parental satisfaction with the fostering of their child's Media Maturity in Kindergarten by...**

*Figure 28* *Satisfaction of Waldorf parents at ECE settings with promotion of media literacy (global survey), 0-3 years: n=206-332, 3-6 years: n=648-725.*

**Results on Steiner Waldorf School parents' satisfaction (overall satisfaction).** The bars in *Figure 29* show that the parents are satisfied overall with the practice in the four overall areas of media education at their child's school ("very satisfied" and "somewhat satisfied" combined), although the level of satisfaction is lower for parents of older children than for parents of children of kindergarten age.

Satisfaction among parents decreases in all four main domains of media education as the age of the pupils increases, although not to the same extent in each of the main areas. Satisfaction with the practice of "media use with media without screens" (green bar) and "pedagogy that supports critical and independent thinking" (purple bar) is quite stable from first grade to upper school: at least eight out of ten Waldorf parents are very satisfied or rather satisfied, so there is a high level of satisfaction in these two areas. When looking at the red coloured bars, which stand for satisfaction with parental counsel-ling and cooperation, the percentage of parents who are "very satisfied" decreases with the increasing age of the children or young people. Whereas in grades 1-3, the level of satisfaction (combining "very satisfied" and "somewhat satisfied") is around 80%, in grades 10-13 it is only around 50%, while around 10% of the parents reported that they were "not at all satisfied" with parental cooperation. Section 6.8.2 discusses in more detail which counselling and cooperation activities parents would like to see in-creased at which age of the children. A similar decrease in satisfaction as the children get older applies to the purple bar, which represents satisfaction with the implementation of the promotion of media literacy through the use of screen-based media. While parental satisfaction in this main domain is still well above 50% from school entry to grades 7-9, the satisfaction rate decreases in grades 10-13 to well below 50% who are at least "somewhat satisfied".

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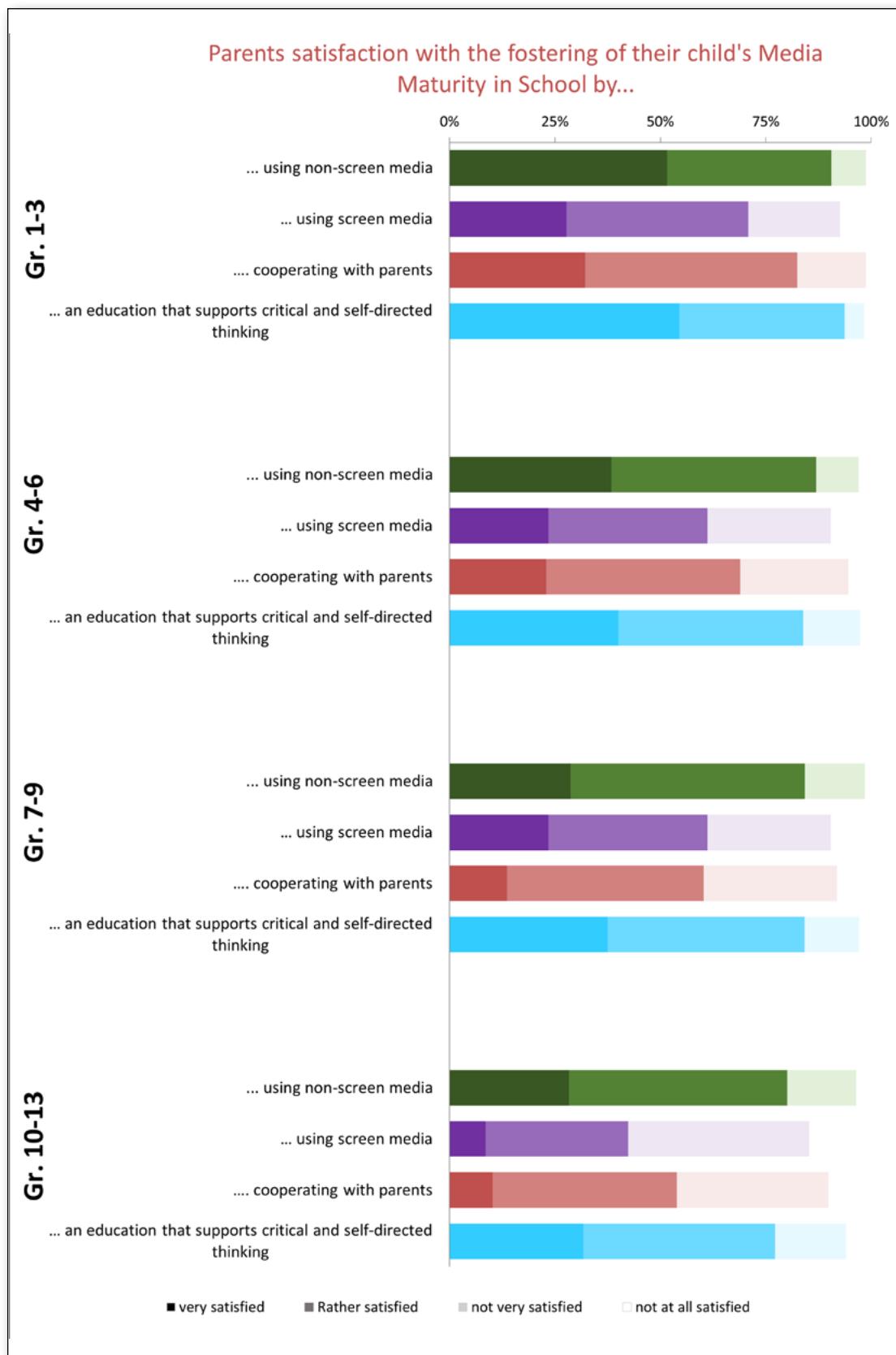
*Figure 29* *Satisfaction of Waldorf parents at schools with promotion of media literacy (global survey), grades 1-3: n=715-604, grades 4-6: n=324-336, grades 7-9: n=270-275, grades 10-13: n=163-167.*

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A more differentiated view of the evaluation of the media education practice using media with as well as without screen is presented in the following overviews in *Figure 30* and *Figure 31*. **Are parents equally satisfied with the implementation of media-related activities in all ten in-depth domains?** To obtain an answer to this question, it is necessary to break down the responses of the survey participants. **In turn, the results of all ten domains were analysed for the two "extreme groups" consisting of kindergarten parents (three- to six-year-olds,** *Figure 30***) and upper school parents (for grades 10-13,** *Figure 31***).** The bar charts contain, from left to right, the representation of the results on parental satisfaction about media-related activities in all ten in-depth domains of the Media Maturity Matrix (see also Section 3.1):

- Six domains of competence from the Media Competence Framework NRW in the MünDig study deal with questions regarding children´s activities involving screen media and non-screen media
- Use of screen and non-screen media by pedagogical staff (see detailed results in Chapter 6.7)
- Empowering children in real life to prevent digital risks (fostering digital resilience), both as an individual and in groups in social connectedness (see detailed results in chapter 6.9).
- Media-related parent counselling and cooperation, including both support/advice on technical as well as pedagogical issues (cf. detailed results in Chapter 6.8)
- Help in processing stressful media experiences, both through the use of screen-based media and through the use of media without screens (cf. detailed results in Chapter 6.10).

*Figure 30* **shows the satisfaction of parents of three- to six-year-olds in ECE settings** with media education activities separately for the ten domains of the study, which are split into two subdomains each. **Parents are satisfied with 18 of the 20 subdomains**, especially with the fact that media without screens are most often used and that digital screen media are not used in their Steiner Waldorf Kindergarten. In two subdomains, less than 50% of the parents that feel confident to judge the frequency - excluding "don´t know" - give the answer "just right". Hypothetically, the statement "just right" could have meant satisfaction with the use of digital screen media. This interpretation of satisfaction with **non-use** can only be clearly confirmed by comparing the parents' statements about which activities they consider suitable at which age (namely, screen media **not** suitable at kindergarten age) and in light of the teachers' reports on their educational practice (namely, no use of digital media at kindergarten age, see Figure 26 above).

However, many parents with children in Steiner Waldorf ECE settings, despite their overall satisfaction with media education, would like to see even **more support in parental counselling and cooperation**, also and especially with regard to technical issues (e.g., installing time limitation and filter software). In the domain "Empowering children in real life to prevent digital risks", almost all parents feel confident in assessing the frequency of implementation, which results in a predominantly positive verdict ("exactly right"). However, there are other domains where a high proportion of parents responded "don't know". This could either mean they do not feel informed about the practice at their children's ECE settings or do know the practice but felt unable to judge whether this is too often or too rarely the case. The domain "Help in processing stressful media experiences" has the highest proportion of "don't know" responses.
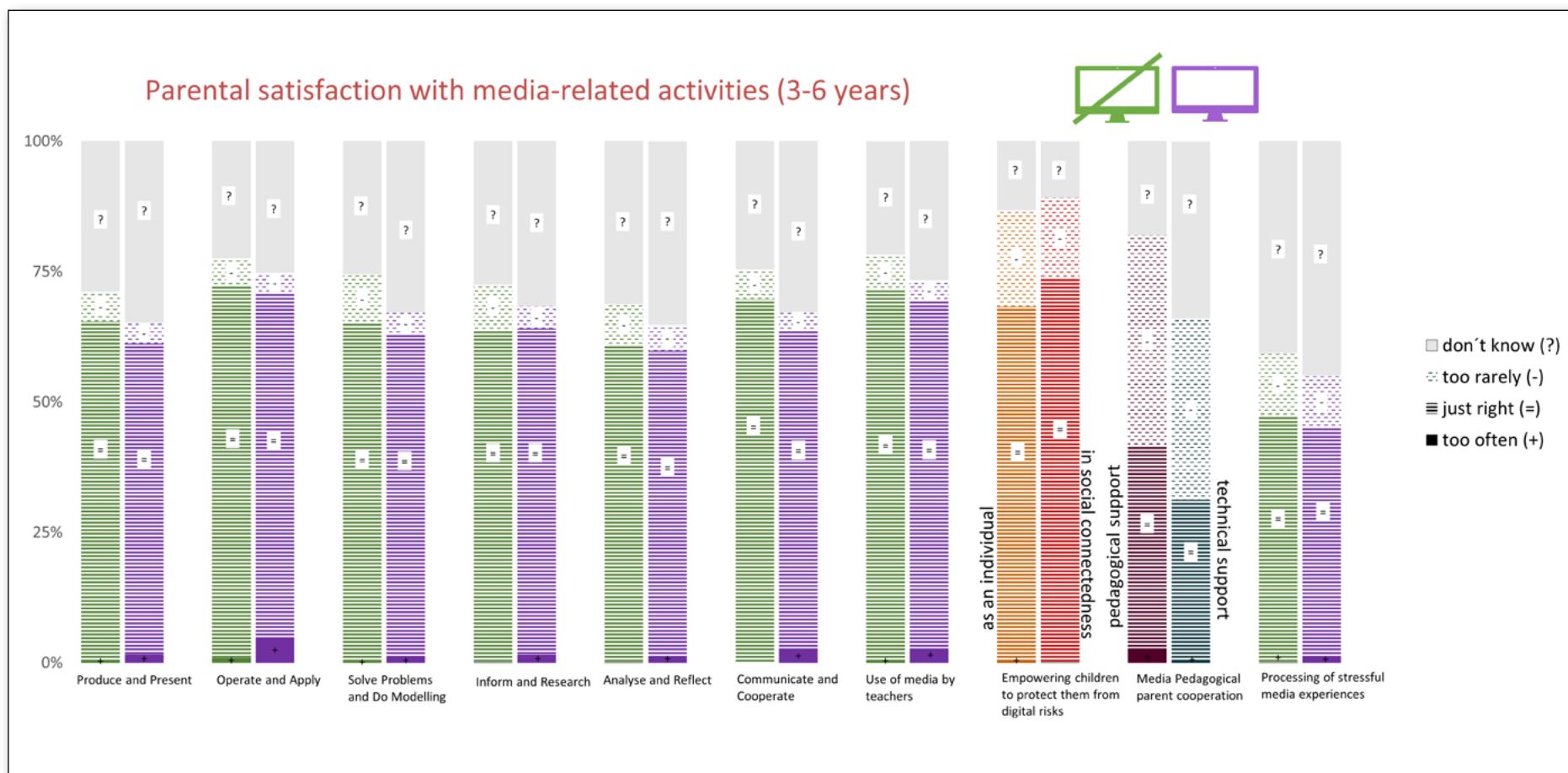
**Figure 30** *Parents' satisfaction with media-related activities during childcare hours at Steiner Waldorf ECE settings (three to six years), n=730-1058.*
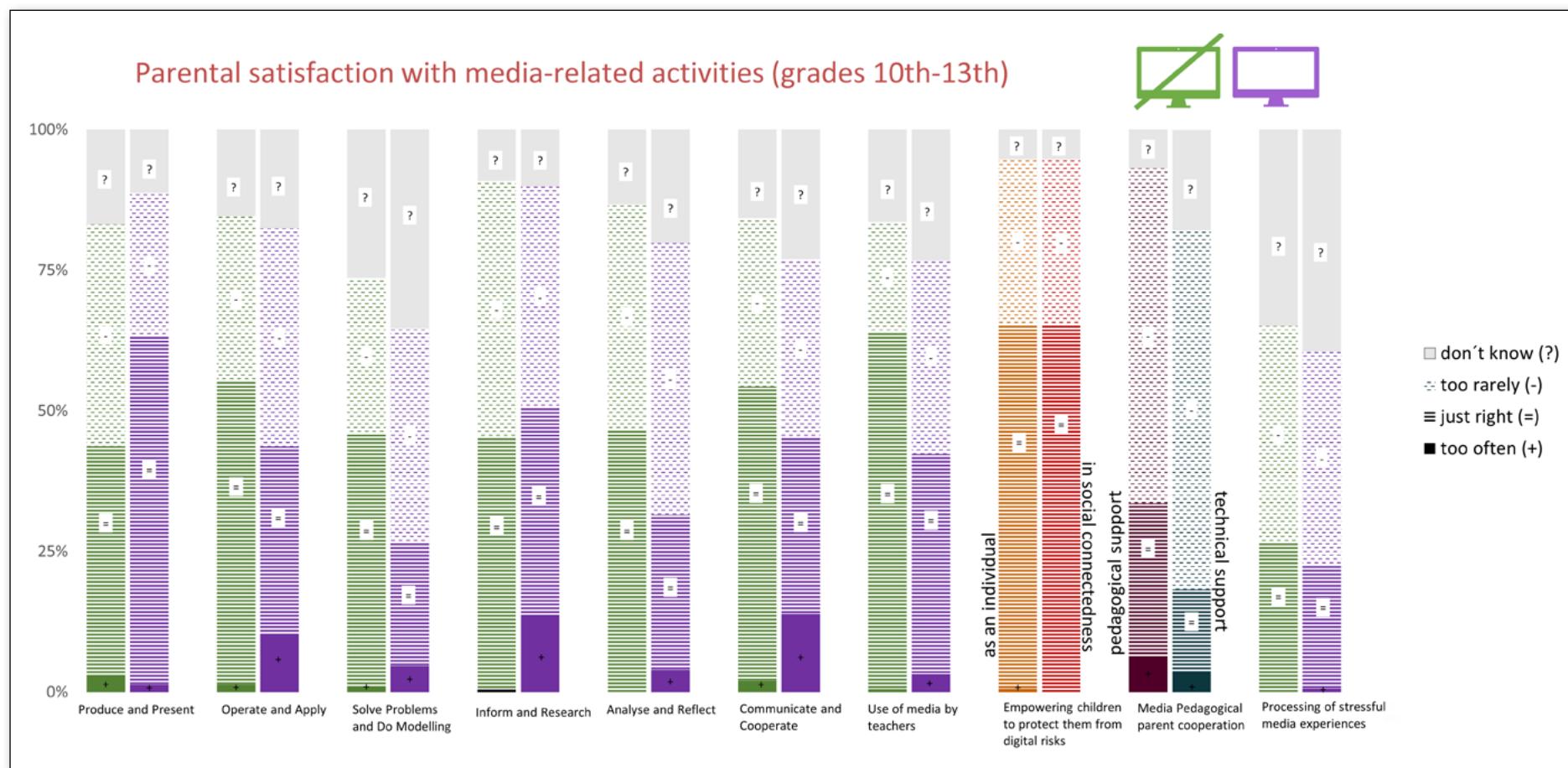
**Figure 31**  *Parents' satisfaction with media-related activities in upper school classes at Waldorf schools (10th-13th grade), n=169-231.*

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8. Fort/Weiterbildungsbedarf

9. Verweis Schüler:innenbefragung

10. Fazit

Verzeichnisse

*Figure 31* **shows the satisfaction of parents in grades 10-13** with media education activities separately for the ten in-depth domains of the study, which are again each divided into two subdomains. Parents are satisfied with 7 of the 20 subdomains. ( At least 50% of the parents who feel confident to judge the frequency - excluding "don't know" - give the answer "just right)).

A **particularly high level of satisfaction among** Waldorf Upper School parents is reported concerning the implementation of media-related activities in the following domains (the % figures refer to the percentage of parents whose response was "just right" in relation to all parents who gave a judgement of the frequency – excluding "don't know"):

• Producing and presenting with media with screen (70 % just right )

• Use of media by professionals of media without screen (76% just right)

• Empowering children to protect themselves from digital risks as an individual (68% just right)

• Empowering children to protect themselves against digital risks in social interaction (68% just right)

Parents with a low satisfaction rating ("too rarely,", percentage calculated only for the group of parents who did not indicate "don't know") see a **particular need to catch up** in the domains of

• Problem solving and modelling using media with screen (69% too rarely).

• Media education parental cooperation, technical support (78% too rarely)

• Processing stressful media experiences using media without a screen (59% too rarely)

• Processing stressful media experiences using screen-based media (63% too rarely)

Some parents of upper school pupils also consider the use of screen media in the Waldorf School too often. This applies most strongly (one out of ten parents) to the domains of "communicating and co-operating", "informing and researching" and "operating and applying". In contrast, only 1% of parents in the upper grades consider the use of screen media for "producing and presenting" to be too often.

In summary, the satisfaction of parents of younger children demonstrated in Figure 30 is much higher than that of parents of pupils in grades 10-13. For parents of children in grades 1-3, satisfaction is still similarly high as in kindergarten (see Chapter 10.2 for an overarching presentation of results concerning grades 1-3), and it gradually decreases from year to year. Consequences derived from this for the further development of pedagogical practice are outlined in Chapter 10.2. To conclude, the assumption from the results of previous surveys (Brodbeck, 2018; Randoll & Peters, 2021) in which media education is mentioned as an urgent area for development with low parental satisfaction, has only partially proven true here: Up to high school age, parents are highly satisfied with the fostering of media maturity by means of an educational approach that encourages critical and independent thinking and action. In the lower and middle school, the dissatisfaction actually relates to the clearly identifiable domain of **parental cooperation, of which more is desired**, and in the upper school to **many domains** in which predominantly too little use of media is criticised, but which surprisingly also applies to the media without screens not explicitly queried in the survey by Brodbeck and Randoll.

# 6. The Ten Domains of the Media Maturity Matrix (MünDig Study Waldorf): Background, results and discussion

# 6.1 "Produce and Present" as a Competence Domain in Media Education: Results and Background of the MünDig Survey of Steiner Waldorf Teachers and Parents

Kernbach, J.; Pemberger, B.; Streit, B.

**Children/pupils … [41]**
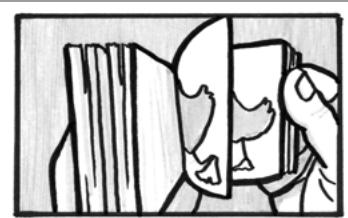


... draw and assemble a flip book
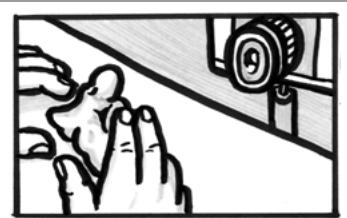


... shoot an explanatory film
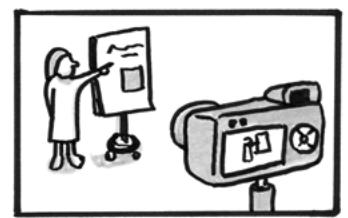


... make a stop-motion play-dough movie



... paint or draw pictures on paper
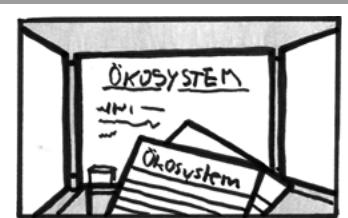


... give presentations with blackboard pictures and/or self-written index cards
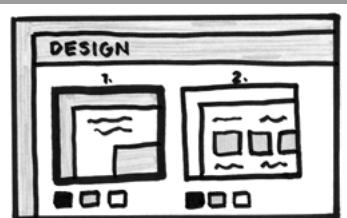


... create a website from scratch (e.g. with Jimdo)

[41] Text and illustrations for all 6 activity examples in the domain "Produce and Present" from the Media Maturity Matrix within the MünDig study

6.1 Produce and Present

6.2 Operate and Apply

6.3 Solve Problems and Do Modelling

6.4 Inform and Research

6.5 Analyse and Reflect

6.6 Communicate and Cooperate

6.7 Teachers' media use

6.8 Foster digital resilience

6.9 Parent counseling

6.10 Process adverse media experience

**Preview of chapter contents.**[42] Of the two general terms "Produce and Present", producing something usually happens some time before presenting it, and suggests that a person creates something on their own. When talking about producing and presenting in the context of children and young people, a variety of important aspects can be discussed. Before reporting the study results (here in Chapter 6, Section 6.1.1 for teachers, Section 6.1.2 for parents) and discussing them, we will try to briefly establish a theoretical frame of reference. In doing so, we will not only focus on the role of producing and presenting in media education but also, somewhat more broadly, on the science of images within artistic-aesthetic education. As a first step, several references to a general approach to (media) production and presentation are given. A second step provides a connection to current educational curricula. The third step presents links to Steiner Waldorf curricula. Finally, we present a larger item pool containing 22 different activities, and explain our selection of six activity examples presented in text and illustrations on the previous page, which were queried in the MünDig study, from this pool.

**"Produce and Present" in Media Education.** Active media work first found its way into educational institutions in secondary schools in the 1970s, helping children and young people to actively understand and use the media surrounding them, such as radio, photography, television, etc.. As early as the 1930s, Walter Benjamin asserted that media consumers should be encouraged to become media producers as well, in order to gain a better understanding of the functions and uses of the respective media (Kramer & Benjamin, 2012). This novel approach, born out of an initial confrontation with the mass media of the time (radio and later cinema), continues to exert influence in the domain "Produce and Present" in media education today.

**Active media work as 3-in-1.** Ever since the origins of active media work, at least three different learning objectives have been linked :

1. One of the goals is that media producers should learn to **reflect critically on media products**. This is clearly in the foreground as a learning objective in Walter Benjamin's work. The idea is close to the considerations presented in Chapter 6.4 on the promotion of critical thinking. There, theoretical and empirical studies are discussed according to which, depending on the pupils' developmental phase, critical thinking about media could be better promoted by encouraging basic developmental goals than by contact with digital screen media, be it through producing or consuming. Under the heading "Analyse and Reflect", Chapter 6.4 additionally discusses in detail the potential of non-production-oriented approaches to fostering critical analysis skills.

2. Another goal is that media producers should acquire (technical) production skills in the process. Training of **media production skills is** clearly at the forefront of many more current approaches to active media work: learning how to plan, record and post-edit a film or audio contribution using editing software, or creating a PowerPoint presentation. In the process, technical skills are put at the service of the product. We address a critique of early and/or isolated teaching of technical use skills in Chapter 6.2 (competence domain "Operate and Apply") in more detail.

3. A final learning goal is that (media) producers should acquire skills from the field of artistic-aesthetic education. Producing and presenting can promote creativity, and make it possible to experience dealing with alternate solutions and fixes, as well as with failure as an important part of a learning path, and much more. (See below in more detail Mollenhauer and Rittelmeier.) Some approaches in art education embed this objective in the even broader educational goal of a transformation in reference to the self and the world. Just as for Foucault writing is a means to change one's own thinking, in these approaches production is understood as a process that includes thinking differently or actually becoming different (Koller, 2018). In some approaches, however, emphasis is placed on the importance of the immediate reference to the world and the appeal to the senses (Selle, 1993), thus addressing the limits of digital media production with regard to this third learning objective.

The three learning objectives of active media education mentioned above have a very different status in suggestions for educational practice in the competence domain "Produce and Present". Depending on the disciplinary positioning of their authors, sometimes only the first, second or third learning goal is emphasised, sometimes even all three.

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42  The chapter is taken from the report volume "MünDig Study Waldorf". In principle, it can be read as an independent publication with its own bibliography, but it contains references to other sections within the overall publication (available for download at https://muendig-studie.de/publications/).

6.1 Produce and Present

6.2 Operate and Apply

6.3 Solve Problems and Do Modelling

6.4 Inform and Research

6.5 Analyse and Reflect

6.6 Communicate and Cooperate

6.7 Teachers' media use

6.8 Foster digital resilience

6.9 Parent counseling

6.10 Process adverse media experience

It can be assumed that many people have at least a rough understanding of the production and presentation of and with media. Media play an important part in the daily routines of many people, , so that a number of media production and presentation activities are at least familiar to many, and they might even be skilled in some of them. A wide variety of media applications are routinely used not only in the early children education (ECE) and school context, but also in private or professional use. Media, whether analogue or digital, are often characterised as tools that can be used to produce something or make something visible. This can be traced back, at least partially, to the tradition of active media work, whose origins ultimately also lie with Walter Benjamin (Schell et al., 1999). The term "media work" alone suggests the production and, if necessary, presentation of something and is connected to an action-oriented media education, i.e., certain media are taken into service by the media users (Theunert, 2006). With a broad understanding of media, paper and crayons are potential tools for active media production, just as well as various digital media employed, for example, to create and use a website. Using these media may create a familiarity that can in turn influence (further) use.

If we take a step back, detached from media production, children and young people in educational institutions produce on many different levels.[43] Such activities can sometimes be deemed more or sometimes less strictly "medial" in nature, in the sense of the Media Competence Framework NRW (see also *Table 7*). A broad understanding of production is based on the assumption that children and young people are in a way continuously active as producers of aesthetic and abstract products, and that this process contributes to their education (Rittelmeyer, 2016). The work of producing and subsequently presenting something self-generated contains the potential to promote creativity. In addition, perseverance and coping with failure and frustration are practiced, since not all creative processes follow an unobstructed linear course. Inherent to these processes is an open outcome, to a certain degree. At least at the beginning of the process, the result cannot (yet) be foreseen (Mollenhauer, 2013; Rittelmeyer, 2016). This is also the case with a variety of media production processes, such as presenting a paper with index cards or producing a stop-motion film (cf. also Sachs-Hombach, 2021, 14ff).

**The (media) competence subdomain** "P**roduce and Present" in curricula**: The media competence domain "Produce and Present" originates from the Media Competence Framework NRW (LVR Center for Media and Education, 2021). This is based on the strategy of the Standing Conference of the Ministers of Education and Cultural Affairs of the Länder in the Federal Republic of Germany "Education in the Digital World" (Kultusministerkonferenz, 2016) which states in an overarching way that *"the focus is less on reproductive learning and more on process- and result-oriented - creative and critical - learning"* (ibid., p. 13). Likewise, it emphasises the variety of creative and productive possibilities for educational institutions, with a frequent reference or even limitation to digital learning environments. Specifically, the domain "Produce and Present" is described in the Media Competence Framework NRW with the sub-competences presented in more detail below in *Table 7*: Media production and presentation, elements of design, source documentation, and the legal basis.

The first two sub-competences refer to the activity of "presenting". On the one hand, they address the concrete planning, design, and presentation of media products from the point of view of the user/viewer/listener. In addition, pupils should become familiar with various design tools and be able to evaluate and apply them in a reflective and critical manner. The two sub-competences aimed at learning about source documentation and the legal basis are closer to the activity of "presenting".Presenting as a competence and as a consequence of producing something is mentioned rather marginally in the Media Competence Framework, as already described above. The focus here is on legal and correct source citations. In the entire competence domain "Produce and Present", the definitions of the sub-competences do NOT include a restriction to producing and presenting with digital media. Surprisingly and without a grounding in the Framework, this narrow understanding (digital media only) is found in the associated Media Passport for Children. This is a common pattern in national and international documents on Digital Education Policy: The broad frameworks refer to media in a broad sense, the recommendations for practice derived from the frameworks are limited to digital media without justification, empirical or theoretical grounding. .

**References to "Steiner Waldorf curricula" in Germany and Switzerland.** For the competence domain "Produce and Present" there is an equivalent in the elaborations on media education at Steiner Waldorf schools by the Federation of Independent Waldorf Schools: "Designing and using media content in a meaningful way" (Boettger et al., 2019, p. 13f). The paper discusses the subdivision described above

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43    Of course, this process also takes place outside educational institutions and not only among children and young people, but in the following we focus on this more defined area.

6.1 Produce and Present

6.2 Operate and Apply

6.3 Solve Problems and Do Modelling

6.4 Inform and Research

6.5 Analyse and Reflect

6.6 Communicate and Cooperate

6.7 Teachers' media use

6.8 Foster digital resilience

6.9 Parent counseling

6.10 Process adverse media experience

with further differentiation between analogue and digital media. Furthermore, there tends to be a greater emphasis on graphic-art design. In the "Curriculum for digital media and informatics education" for Steiner Waldorf schools in Switzerland and Liechtenstein, the system is somewhat different. Module M2 "Learning and designing with media", corresponds in some ways to the competence domain "Produce and Present" (Schmidt, 2020). According to the Media Competence Framework NRW, module M2 also refers to producing and/or presenting with media. In this case, activities are further subdivided into performing and artistic activities and analogue digital text and visual media. There is also a correspondence to source documentation and the handling and knowledge of pertinent legal regulations.

**Selection of the items from a larger item pool.** The activity examples queried in the MünDig study are presented in text and illustrations at the beginning of this chapter. The selection of items is based on the competence domain "Produce and Present" from the Media Competence Framework NRW (LVR Center for Media and Education, 2021) and the examples mentioned there. Due to the lack of non-screen-based activities[44] on the corresponding website, additional activity examplesy from the qualitative preliminary studies were also used, in which many activities with media without a screen were named by the Waldorf/Montessori teachers. It should be taken into account that the Media Competence Framework NRW is designed for school-age children and thus describes competences that should be acquired by the end of grade 8 or grade 10 by the pupils as a target perspective. In order to increase the item overlap between the school and ECE/kindergarten surveys, the structure of the Media Competence Framework was retained, but supplemented with activity examples that could be put into practice even at kindergarten age. In the collection for the expanded item pool, additional care was taken to include the production of audio media as well as visual media. Furthermore, production in the IT area, i.e., creating hardware as well as software, along with activities in which there are no materially tangible or stored products, were also included in the item selection. From the field of performing arts, these include, for example, singing, dancing, making music, role-playing and theatre. Finally, six activity examples were selected for each questionnaire, considering the following criteria for selection:

• Splitting into three activities with screen and three without screen,

• Covering as many different sub-competences from the media literacy framework as possible,

• Selecting activities that can be considered typical for different age groups.

In the final selection of the items after piloting the survey instrument, we decided to limit ourselves to a narrower, commonly accepted concept of media production. The following reasons led to this decision: First, it seemed impossible to fulfil all criteria when selecting the items. This would have led to considering 16 different activity examples per domain, which would have resulted in an even longer survey duration. Second, the restriction to a narrower understanding proved to be a necessary solution to reduce dropout rate when completing the questionnaire. During the test phase, we received more feedback and questions from the test respondents regarding the items that can be assigned to a very broad understanding of media. In addition, there were difficulties with clearly assigning the broad activity examples to just one of the competence domains in the Media Competence Framework NRW: They could sometimes be assigned to three or more domains. Among other things, this is due to the fact that a combination of various individual competence domains is covered simultaneously by a single activity example, or that the activity mentioned as an artistic process cannot be "broken down" so easily and unambiguously into partial competences, as indicated by the above-mentioned three different learning objective areas.

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44  In contrast to the broad concept of media in the formulations of the Media Competence Framework (cf. Table 7), in the Media Passport 4.1 it is explicitly restricted to the operation and use of digital screen media, while 4.2 to 4.4 are compatible with a broad concept of media: 4.1 "I have already designed the following digital media products: …" 4.2 "I know how to use images, fonts, and sounds to achieve certain effects." 4.3 "When I use images or text in my work, I include where they came from." 4.4 "I do not publish images or information from others without permission." It is therefore all the more surprising that no practical ideas without the use of digital screen media can be found for sub-competences 4.2, 4.3 and 4.4 in the example pool https://k-plus.medienzentrum-coe.de/medienkonzept/medienkompetenzrahmen-nrw/1-bedie-nen-und-anwenden/.

6.1 Produce and Present

6.2 Operate and Apply

6.3 Solve Problems and Do Modelling

6.4 Inform and Research

6.5 Analyse and Reflect

6.6 Communicate and Cooperate

6.7 Teachers' media use

6.8 Foster digital resilience

6.9 Parent counseling

6.10 Process adverse media experience

*Table 7* lists the originally broader spectrum of activity examples from which a selection was used for the MünDig study according to the criteria described above. In the left column there is an activity with media using a screen, in the middle column an activity without a screen, and on the right an assignment to the four sub-competences (in this case 4.1 to 4.4) from the Media Competence Framework NRW.

| Produce/present with screen: | Produzieren und Präsentieren ohne Bildschirm: Kinder/Schüler: innen … | Teilkompetenz Medienkompetenz-rahmen NRW |
|---|---|---|
| … give presentations with page-oriented presentation software (e.g. PowerPoint) | … give presentations with black-board pictures and/ or self-written index cards | 4.1 Plan, design, and present media products appropriately for the target audience; know and use opportunities for publishing and sharing. |
| … plan and create radio reports (recording technology, audio software) | … plan, design and present a live radio play | 4.1 Media production |
| … create an audio production with Theremin (synthesizer precursor) | … perform an audio production with instruments | 4.1 Media production |
| … make a stop-motion play-dough movie | … paint or draw pictures on paper | 4.2 Know and reflectively apply means of designing media products and evaluate them with regard to their quality, effect and intended message. |
| … design and program computer games (e.g. with Python) | … design and perform role plays | 4.2 Elements of design |
| … create 3D animations with loops | … work out and practice dance/ movement choreographies | 4.2 Elements of design |
| … shoot an explanatory film | … draw and assemble a flip book | 4.2 Elements of design |
| … take pictures with a digital camera and edit images digitally | … photograph with blue print (solar photography) | 4.2 Elements of design |
| … create a website from scratch (e.g. with Jimdo) with source information | … create posters for a performance with source information | 4.3 Know and apply source citation standards when producing and presenting own and others' content. |
| … create a blog (e.g. on the school website with references). | … name sources in presented papers | 4.3 References |
| … learn about and apply personal rights, copyright and rights of use (e.g. to the school website) | … learn about and apply personal rights, copyright and rights of use (e.g. school newspaper) | 4.4 Review, evaluate and observe the legal basis of personal rights (including image rights), copyright and rights of use (including licenses). |

**Table 7** *Extended item pool in the domain "Produce and Present" of the MünDig study with references to partial competences in the Media Competence Framework NRW*

6.1 Produce and Present

6.2 Operate and Apply

6.3 Solve Problems and Do Modelling

6.4 Inform and Research

6.5 Analyse and Reflect

6.6 Communicate and Cooperate

6.7 Teachers' media use

6.8 Foster digital resilience

6.9 Parent counseling

6.10 Process adverse media experience

## 6.1.1 The domain "Produce and Present": Results of the teacher survey

**Reading instructions and methodological preliminary remarks on the presentation of results.**
As an orientation for you as reader within the double-page comparison starting here (on the left in blue the teacher survey, on the right in red the parent survey), you have the option to compare left and right. Or you can follow the text flow downwards - indicated by the blue or red arrows (and not, as usual, by the page numbers).
Results of the findings from the teacher survey at Steiner Waldorf educational institutions in the competence domain "Produce and Present" are presented below. Both the media-related attitudes are reported (What is considered suitable? - *Figure 32*) as well as the practice in everyday life of teachers in the school in the three following figures (What is put into practice? - *Figure 35*). It should be noted that in three of the four figures, the results are summarised for all respondents from day nursery to upper school. In Figure 37 however, the results are displayed separately for six groups of teachers according to which age group they primarily work with (under 3, over 3, grades 1-3, grades 4-6, grades 7-9, grades 10-13).[45] To enable an overarching comparison, in all figures, whether curve or bar chart, activities with a screen are coloured purple and those without a screen are coloured green[46] .

*Figure 32* shows the answers to the question which activity examples in the domain "Produce and Present" the surveyed teachers consider suitable.[47] The question was asked in such a way that each individual respondent could enter a starting age and an ending age for each of six activity examples shown in the text and illustration. Since all six activity examples in the domain "Produce and Present" were used in both the kindergarten and the school survey, two checkmarks - √√ - are set for all activity examples[48] in the legend for Table 8.

**Results: What is considered suitable?** The results of the MünDig study for the domain "Produce and Present" are reported below, first from the perspective of the teachers. In each case, the starting point is the question of which activity example is suitable for which age. Teachers consider the two screen-free activities "paint or draw pictures" and "draw and assemble flipbooks" to be suitable activities at a very early age. For children aged two years drawing pictures is considered a suitable activity by 65% of the respondents. Almost all (90%) of the respondents believe that this is the case until adulthood. In contrast, the activity of children making their own flip book is considered suitable according to 58% of respondents at approximately age six. A majority (82-83%) of teachers state that the most useful age range for this activity is between nine and ten years old. In contrast to the activity "drawing pictures",

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45   This chapter provides a detailed reporting of the results. This should help to understand why a slightly shorter, summarised presentation of the available descriptive study results for the following nine domains appears to be justified. For one of the ten queried domains, namely producing and presenting, the results are presented separately for kindergarten teachers and for upper school teachers in two additional figures, as well as ina summarised figure for all teachers, from kindergarten to upper school. It can be seen that the curves in all three figures are very similar. Either the media-related attitudes of Waldorf teachers are indeed strongly homogeneous or a possible inhomogeneity is at least not linked to the age of the target group the teachers work with in practice. Individual differences might still exist that could be predictable by other variables such as age, level of education, own technical skills (recorded as self-assessment), relevance of overarching educational domains (cf. 4.2.1), etc., which would make profitable a future data analysis that goes beyond descriptive representation using methods such as cluster analysis (cf. et al. Backhaus et al. (2021)) or non-parametric conditional inference trees (C-trees, cf. Strobl et al. (2009)) based on the principle of recursive partitioning.

46   There was no such colour distinction in the survey itself. All items were presented in black font and partly with illustrations in grayscale (cf. Sect. 3)

47   The question was divided into three parts: A. a preliminary remark, B. an exercise on how to use the slide bar to set an age range (not fully presented here, cf. Sect. 3), and C. the specific question on one of the ten domains.
A. Preliminary Remarks. "Now we are going to talk in detail about ten different areas of media education. In three of the ten domains, we will ask you a more in-depth supplementary question. The understanding of media education is broad. It's about both: digital screen media (e.g., computers, tablets, smartphones, TV), and analogue media without screens (e.g., books, newspapers, flipbooks, and also language). Here is a brief preview:
Area 1 to 6: Children's use of media in different areas such as presenting, communicating, researching, programming,...
Area 7: Use of media by teachers
Area 8: Cooperation with the caretakes outside the institutions, advice and support for parents in questions of media education.
Area 9: Empowering children in real life for preventing digital risks
*Area 10: Supporting children in* **processing stressful media experiences**
*Important: The questionnaire is not limited to a specific age. It is always also about how you think media education should be structured starting at birth, through kindergarten and up to adolescence. "*
B. Slide bar exercise: "*In the next ten domains, we will repeatedly ask you to make entries using the slide bar shown below. For this purpose, here´s an exercise on how to use it in advance.*"
*It may depend on the age or developmental stage of the children which media you consider suitable for which purposes and which you use.* **There can be differences from child to child***. If you are repeatedly asked for an age range for the following ten domains, please think of the* **average of all children** *without special needs.*
C. The specific question: *1 of 10: Produce and present: At what age range is it appropriate for children to do the following in daycare/school?*
Response options: for each of the six items (sample activities), "not at all" or setting an age range between 0 and 18 using the slider.

48   In most of the other ten domains, some activities were asked only about kindergarten, others only in school, so that there are not only six, but up to nine different activities in the figures.

## 6.1.2 Produce and Present: Results of parent survey

**Reading instructions and methodological preliminary remarks on the presentation of findings.** As an orientation for you as a reader within the double-sided comparison starting here (the teacher survey on the left in blue, the parent survey on the right in red): You have the option to compare left and right, or you can follow the text flow downwards - indicated by the blue or red arrows (and not by the page numbers as usual). The question which activity examples in their educational institutions in producing and presenting are considered suitable for children of various ages was asked in the same way as in the teacher, parent and pupil survey, with minimal changes in wording. For explanations of the survey method, we therefore refer mainly to the text on the left for the teacher survey and to Chapter 3. The results for two of the three figures are presented as a summary for all respondents from ECES parents to high school parents. In *Figure 43* however, the presentation is made separately for groups of parents whose youngest child belonged to one of 6 different age groups (under 3, over 3, grades 1-3, grades 4-6, grades 7-9, grades 10-13) based on the age stated by the parents[52] .

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52   The breakdown by age categories was carried out as described in Section 3 based on the answers to the question at the beginning of the questionnaire: In which class does your youngest child attend a reformed school [in the ECE questionnaire: ECE] (Waldorf/Montessori/Other)? If "your child" appears in the following, the question always refers to this child. If, on the other hand, "children" are mentioned, then children in general are meant.

6.1 Produzieren und Präsentieren

6.2 Bedienen/ Anwenden

6.3 Problemlösen/ Modellieren

6.4 Informieren/ Recherchieren

6.5 Analysieren/ Reflektieren

6.6 Kommunizieren/ Kooperieren

6.7 Medieneinsatz Fachkräfte

6.8 Eltern- zusammenarbeit

6.9 Kinder im Leben stärken

6.10 Verarbeitungs- hilfen

this curve drops after a maximum. From the age of 14 and into adulthood, this activity is considered suitable by only 50% of respondents. The non-screen activity of giving a "presentation with blackboard/ index cards" is considered suitable by some teachers from the beginning of grade 3 (25%). It gains steadily in reported suitability with increasing age, and experiences a very high agreement of the inter-viewed teachers with 94% for the age group of 14-year-olds.
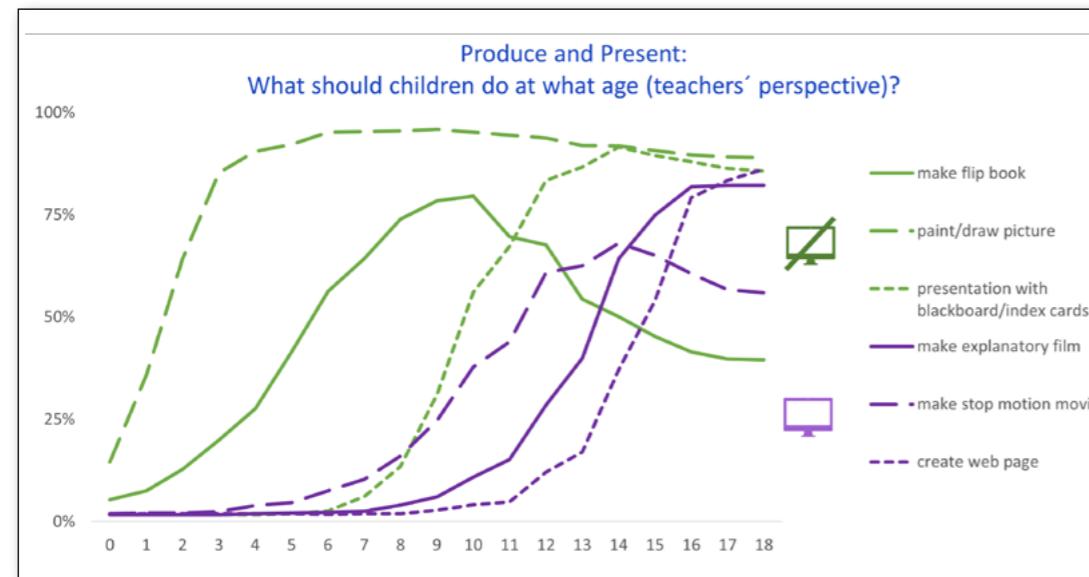


**Figure 32** *Which children´s activities are considered suitable by Steiner Waldorf professionals? Domain „Produce and Present"*

| Produce and Present | n | not at all | missing | queried in ECE | queried in school |
|---|---|---|---|---|---|
| ... draw and assemble a flip book | 655 | 30 | 18 | ✓ | ✓ |
| ...paint or draw pictures on paper | 633 | 11 | 59 | ✓ | ✓ |
| ...give presentations with blackboard pictures and/or self-written index cards | 656 | 18 | 29 | ✓ | ✓ |
| ... shoot an explanatory film | 582 | 89 | 32 | ✓ | ✓ |
| ... make a stop-motion play-dough movie | 556 | 111 | 36 | ✓ | ✓ |
| ... create a website from scratch (e.g. with Jimdo) | 597 | 80 | 26 | ✓ | ✓ |

**Table 8** *Number of respondents, indication „not at all", missing values and query in ECE/school questionnaire, domain "Produce and Present (suitable according to teachers)*

In this query, the practical example "Making a stop-motion film" is the only medium with a screen that receives approval for the lower school age and younger age groups, albeit only from a maximum of 9% of the respondents. Just over half (52%) of the respondents consider this a useful activity for 11-year-olds, with the highest agreement at 81% reported for an age of 14. That producing a stop-mo-tion film should be considered suitable in the lower school age is maybe not that surprising, since this activity example contains predominantly creative and analogue components, and screen me-dia are only used in the final production phase. This can be seen as a reason why it is considered by some authors as an ideal medium for transitioning from analogue to digital media. The practical example of making an explanatory film (taking the stop-motion film a step further) is advocated by 46% of the teachers for the 13-year-old age group, i.e. around two years later than they recommend producing a stop-motion film. From the age of 16, 94% of all respondents consider this a suitable activity. . The practical example "creating a website" is the only one considered to be a useful ac-tivity at an even later age. Here teachers do not see it as a suitable activity until about grade 7 on-wards. Thus, for the age group of the approx. 13-year olds, 19% of the participating teachers advo-cate this practice example, and there is a steep rise for older age groups.. Starting from a pupil's age

**Results: Which activity examples are considered suitable?** The participating Steiner Waldorf parents show high agreement in that they see producing and presenting with non-screen media as suitable, especially for younger age groups, which can be seen in the figure by an increase in the green curves further to the left.
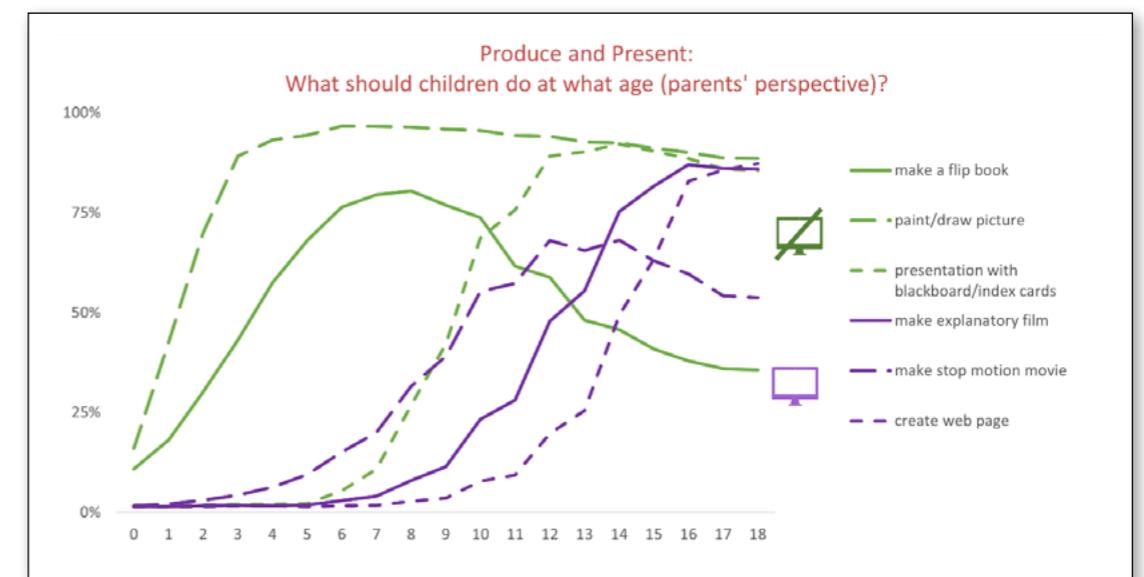


**Figure 38** *Which children´s activities are considered suitable by Steiner Waldorf parents? Domain "Produce and Present"*

| Produce and Present | n | not at all | missing | queried in ECE | queried in school |
|---|---|---|---|---|---|
| ... draw and assemble a flip book | 3344 | 102 | 35 | ✓ | ✓ |
| ...paint or draw pictures on paper | 3164 | 20 | 297 | ✓ | ✓ |
| ...give presentations with blackboard pictures and/or self-written index cards | 3331 | 40 | 110 | ✓ | ✓ |
| ... shoot an explanatory film | 3069 | 295 | 117 | ✓ | ✓ |
| ... make a stop-motion play-dough movie | 2934 | 433 | 114 | ✓ | ✓ |
| ... create a website from scratch (e.g. with Jimdo) | 3013 | 360 | 108 | ✓ | ✓ |

**Table 11** *Number of respondents, indication "not at all", missing values and query in ECE/school questionnaire, domain "Produce and Present" (suitable according to parents)*

The activities using screen devices are considered useful by Steiner Waldorf parents quite consistently for older children and young people. The purple curves in *Figure 38* however, rise significantly later than the green curves, suggesting that the parents surveyed do not yet view these activities as suitable for younger children. A more detailed look reveals that 70% of parents surveyed find it suitable for children as young as 2 years old to draw or paint pictures. This activity is indicated in the questionnaire as suitable, still with a slight increase, up to the maximum age (18 years) that could be indicated in the survey. The result curve for the suitable production and presentation of a flipbook shows a slightly later onset and earlier decline with increasing age. For children at the age of 4 years, 57% of the parents see this activity as suitable; the peak for this activity is found at 80% of parents for children aged 8 years. At 18 years, 36% of parents still believe that young people should draw or make a flip book. The activity example of a child doing a presentation on a blackboard or with the support of index cards, is seen as useful by parents as a whole somewhat later, namely only after the children start school. Over a quarter (27%) of the participating parents see this as a suitable activity for children aged 8. At the age of 10, this is already supported by 69%, and at the age of 18, 89% of the parents surveyed see this as a suitable media activity. In the purple curves, which represent the results of media using a screen, the earliest onset age for the surveyed item "Make a stop-motion film" is given by the surveyed parents. A small proportion of participating parents surveyed (20%) see this as appropriate for children as young as 7,

6.1 Produzieren/
Präsentieren

6.2 Bedienen/
Anwenden

6.3 Problemlösen/
Modellieren

6.4 Informieren/
Recherchieren

6.5 Analysieren/
Reflektieren

6.6 Kommunizieren/
Kooperieren

6.7 Medieneinsatz
Fachkräfte

6.8 Eltern-
zusammenarbeit

6.9 Kinder
im Leben stärken

6.10 Verarbeitungs-
hilfen

6.1 Produce and
Present

6.2 Operate
and Apply

6.3 Solve Problems
and Do Modelling

6.4 Inform and
Research

6.5 Analyse and
Reflect

6.6 Communicate
and Cooperate

6.7 Teachers'
media use

6.8 Foster digital
resilience

6.9 Parent
counseling

6.10 Process adverse
media experience

of about 16 years, 89% of participating teachers consider website creation to be a suitable activity. Thus, teachers clearly advocate screen-free media first for producing and/or presenting media content. A consistent attitude can be found in the responses: A sequence of activities is considered suitable. Pupils should first try out production and presentation skills without screen media, presumably to learn their mechanisms and "what to look out for" in an error-friendly and transparent activity. In a second step, building on this, teachers advocate the practical examples using screen media as suitable activities.

**Do ECE teachers find different activities suitable compared high school teachers?** *Figure 33* shows the results of the question about which medium is considered suitable for which age, limited to the group of participating Steiner Waldorf kindergarten teachers, i.e., to those who indicated that they work primarily with children between three and six years of age. In contrast, in *Figure 34* the corresponding results are shown for Steiner Waldorf upper school teachers.
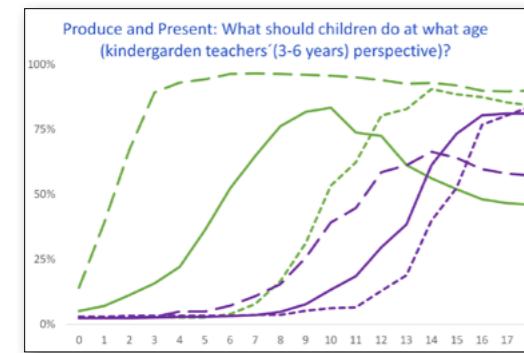


*Figure 33* Which children´s activities are considered suitable by Steiner Waldorf kindergarten staff (3-6 years)? Domain "Produce and Present "
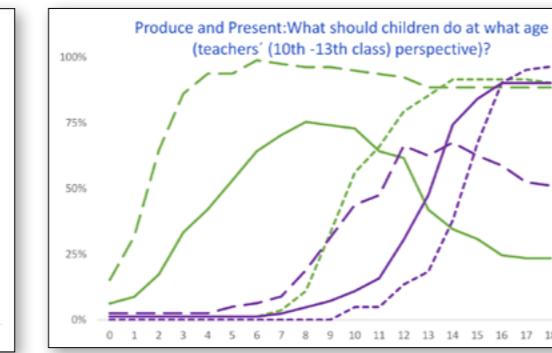


*Figure 34* Which children´s activities are considered suitable by Steiner Waldorf upper school teachers? Domain "Produce and Present "

| Produce and Present | n | not at all | n | not at all |
|---|---|---|---|---|
| | Kindergarten teachers (children over 3) | | Upper School Teachers | |
| ... draw and assemble a flip book | 313 | 4% | 81 | 3% |
| ... paint or draw pictures on paper | 298 | 1% | 79 | 1% |
| ... give presentations with blackboard pictures and/or self-written index cards | 306 | 2% | 82 | 2% |
| ... shoot an explanatory film | 304 | 14% | 82 | 5% |
| ... make a stop-motion play-dough movie | 303 | 19% | 80 | 13% |
| ... create a website from scratch (e.g. with Jimdo) | 303 | 14% | 82 | 4% |

*Table 9* Number of respondents, indication "not at all", missing values, for the domain "Produce and Present", separated by teachers on the opposite ends of the age spectrum (kindergarten teachers vs. upper school teachers)

There are only slight differences between the curves. In fact, the upper school teachers consider "making a flip book" to be a suitable activity somewhat earlier than the ECE teachers, with a lower maximum value and lower final value. The curves for "make an explanatory film" and "create a website" reach higher final values of 90% or more for the upper school teachers, compared to around 80% for the ECE teachers. Hardly any differences between the kindergarten and upper school teachers are found in the responses for "drawing pictures" and "presentations with index cards and blackboard pictures".

**Results: Which activity examples are put into practice?** *Figure 35* shows the answers to the question about which activity examples the pupils in the domain "Produce and Present" actually implement dur-

with the highest level of agreement at 68% for children as old as 14. "Making an explanatory film" is considered suitable by parents somewhat later, but overall at age 14 and older this is considered a very useful practice (75%). Even at the age of 18, 86% of the parents surveyed consider this is an age-appropriate activity. Bringing up the rear regarding a suitable age of onset in the parents' survey is the item "create a web page." For children aged 12, 20% of parents approve of this practice activity; from then on, approval increases steadily with the age of the children and records an approval rating of 87% of parents for young people aged 18.

**Do ECE parents find different activities suitable compared to high school parents?** *Figure 39* shows the results to the question about which medium is considered suitable for which age limited to the group of participating Steiner Waldorf ECE parents, i.e., to those who stated that their youngest child enrolled in an early child education (ECE) programme is between three and six years old. The corresponding findings for the participating Steiner Waldorf upper school parents are shown in *Figure 40*.
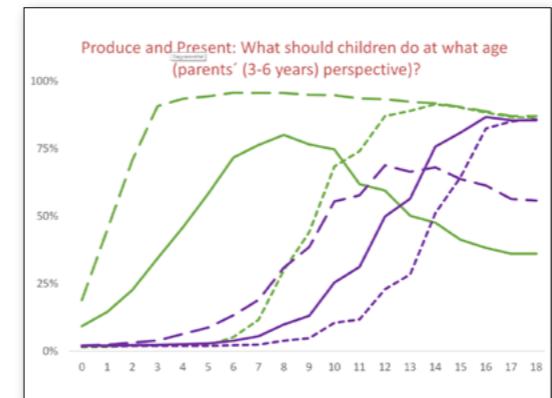


*Figure 39* Which children´s activities are considered suitable by Steiner Waldorf Kindergarten (3-6 years) parents? Domain "Produce and Present"



*Figure 40* Which children´s activities are considered suitable by Steiner Waldorf upper school parents? Domain "Produce and Present"

| Produce and Present | n | not at all | n | not at all |
|---|---|---|---|---|
| | Kindergarten Parents (3-6 years) | | Upper School Parents | |
| ... draw and assemble a flip book | 1132 | 3% | 241 | 3% |
| ... paint or draw pictures on paper | 1042 | 0% | 228 | 1% |
| ... give presentations with blackboard pictures and/or self-written index cards | 1110 | 1% | 239 | 1% |
| ... shoot an explanatory film | 1105 | 9% | 236 | 9% |
| ... make a stop-motion play-dough movie | 1104 | 13% | 235 | 14% |
| ... create a website from scratch (e.g. with Jimdo) | 1106 | 38% | 237 | 7% |

*Table 12* Number of respondents, indication „not at all", domain "Produce and Present", separated by age group extremes (suitable according to ECE staff vs. upper school teachers)

The differences between the curves are only very slight. One difference stands out: While half of the upper school parents consider "making a flip book" to be useful, at the age of three, only one third of the ECE parents do. Except for the earlier rise in this curve, the curves for all activity examples are very similar.

ing the care time or class lessons provided by Steiner Waldorf teachers.49 This "additional question" was not asked of all teachers in the survey, but was randomly assigned to each person for only three of the ten domains. The query was again formulated so that each individual respondent had to indicate a starting age and a maximum age for each of the activity examples, in this case for producing and presenting. Again, activities using a screen are shown in purple, non-screen activities in green.
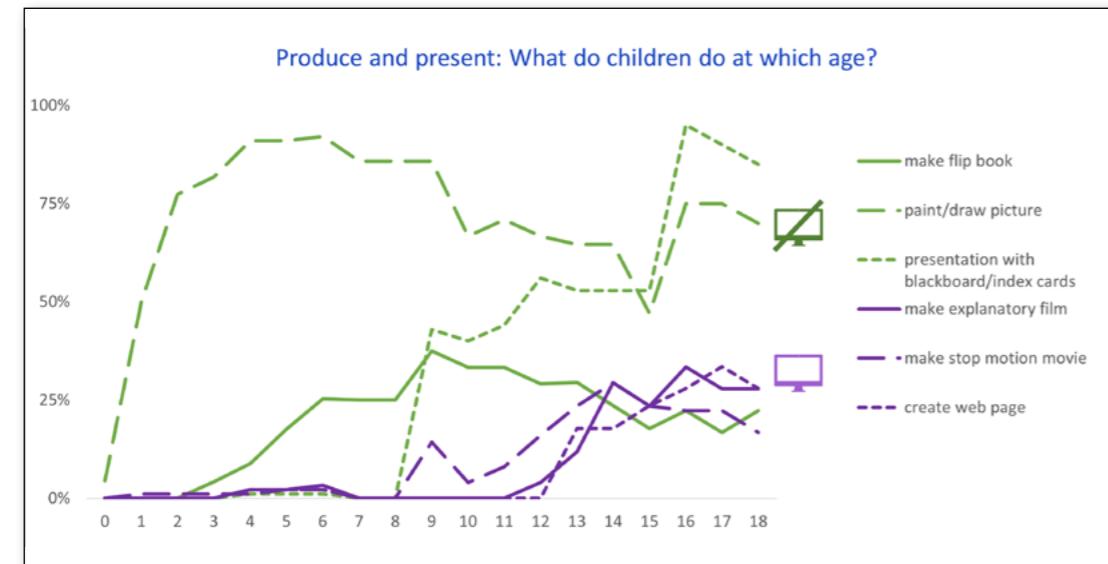


*Figure 35*  *What do children do at what age in Steiner Waldorf kindergartens/schools? Domain "Produce and Present"*

| Produce and Present | Age category | n | queried in ECE | queried in school |
|---|---|---|---|---|
| … draw and assemble a flip book | under 3 | 23 | ✓ | ✓ |
| … paint or draw pictures on paper | over 3 | 90 | ✓ | ✓ |
| … give presentations with blackboard pictures and/or self-written index cards | gr. 1-3 | 8 | ✓ | ✓ |
| … shoot an explanatory film | gr. 4-6 | 25 | ✓ | ✓ |
| … make a stop-motion play-dough film | gr. 7-9 | 17 | ✓ | ✓ |
| … create a website from scratch (e.g. with Jimdo) | gr. 10-13 | 20 | ✓ | ✓ |

*Table 10*  *Number of respondents, indication "not at all", missing values and query in ECE/school questionnaire, domain "Produce and Present" (teachers' practice)*

The curves in *Figure 35* have consistently lower maximum values ("peaks") compared to the curves in *Figure 32*. Compared to the curves in *Figure 32*, the curves involving screen activities are significantly lower, and the activities start at a slightly higher age in children and young people. The activity "drawing or painting a picture" shows the highest similarity to the corresponding curve in *Figure 32*. In addition, the curves generally show higher fluctuations, which can probably be explained by the lower number of participants (see footnote 51).

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49  The question asked: Domain 1 of 10: Produce and Present. What is the age range of the pupils who do the following in your classroom? Response options for each of the six sample activities: answer "not at all" or alternatively determine an age range of implementation using the slide bar. Analysis of the results was carried out separately for each of the six age categories (under 3, over 3, grades 1-3, grades 4-6, grades 7-9, and grades 10-13). As a result, some of the curves from older publications differ significantly due to a different evaluation method. In the old presentations, the data were analysed together for the entire sample, so that the values were sometimes very low because the percentage value was calculated by dividing by the number of all respondents who were assigned the in-depth question in the first place. However, it is correct, and this has now been taken into account, to consider only the responses of people who are actually active in the age group in question, and then also to divide only by the number within this age group who had been assigned the in-depth question. As a result, the percentage values are higher, but the number of cases per data point in the figure is still significantly lower, namely on average by a factor of thirty lower than in the previous figure (What activity is considered suitable?), which explains the jumps and irregularities in the curve that occur in some cases.

**Which sample activity examples make are considered suitable? Results from the pupil survey.** The results of the Steiner Waldorf pupil survey will be presented in a separate document that will be available in late 2022. However, in order to provide an initial comparison for anyone interested in reading the report before that date, the pupils' responses to the question of what activity examples they consider suitable at what age in the domain "Produce and Present" are provided in *Figure 41*..
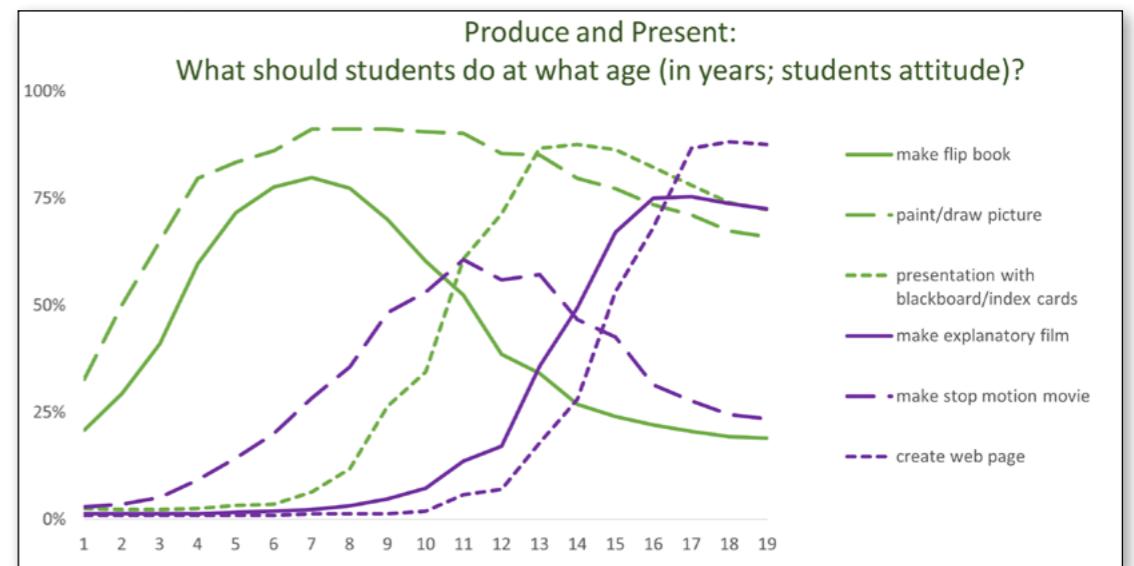


*Abbildung 41*  *Which children´s activities are considered suitable by Steiner Waldorf school pupils (aged 16 and more)? Domain "Produce and Present""*

| Produce/ Present | n | not at all | missing |
|---|---|---|---|
| … draw and assemble a flip book | 303 | 9 | 6 |
| … paint or draw pictures on paper | 281 | 7 | 28 |
| … give presentations with blackboard pictures and/or self-written index cards | 301 | 12 | 8 |
| … shoot an explanatory film | 303 | 49 | 6 |
| … make a stop-motion play-dough movie | 303 | 48 | 8 |
| … create a website from scratch (e.g. with Jimdo) | 301 | 28 | 8 |

*Tabelle 13*  *Number of respondents, indication "not at all", missing values and query in ECE/school questionnaire, domain "Produce and Present" (suitable according to parents)*

Activities **using screen devices are** seen as useful for older children and young people by the Steiner Waldorf pupil respondents (only those at least 16 years old were asked to participate in the survey). In contrast, most of the curves of media with screen in Figure 41 rise significantly later than the outcome curves of activities without screen media, indicating that the surveyed pupils do not yet consider these activities suitable for younger children. The production of a stop-motion cartoon is considered useful by some of the pupils as early as kindergarten age (14% for five-year-olds). The maximum of this curve is reached at the age of 11 with 53%). Only 30% of the surveyed pupils think it is suitable for children to draw pictures at the age of two (in comparison: 70% of parents). Pupils are less convinced that activities without a screen are suitable for young children than the teachers and parents surveyed. However, the activity "drawing/painting pictures" is still considered suitable by many for the final age (18 years) in the questionnaire, at 60% after a peak of 90% with the seven-year-olds. The result curve for the suitable production and presentation of a flip book shows an earlier increasing and earlier decreasing course which is shifted to the left by about two years compared to the curves from the teacher and parent survey. For children at the age of four, 58% of the pupils consider this activity suitable (compared to the parents: 57%). The peak is reached here with 76% for children at the age of seven (for the parents at the age of eight). For 18-year-olds, 36% of the pupils surveyed still think that they should draw or make a flip book. The "holding of a presentation with index cards" is seen as useful by pupils much later, namely only after the children have started school. Only 11% of the pupils surveyed consider this to be useful for children at the age of eight, while 33% are in favour of it for ten-year-olds (parents: 47%).

6.1 Produce and Present
6.2 Operate and Apply
6.3 Solve Problems and Do Modelling
6.4 Inform and Research
6.5 Analyse and Reflect
6.6 Communicate and Cooperate
6.7 Teachers' media use
6.8 Foster digital resilience
6.9 Parent counselling
6.10 Process adverse media experience

6.1 Produce and Present

6.2 Operate and Apply

6.3 Solve Problems and Do Modelling

6.4 Inform and Research

6.5 Analyse and Reflect

6.6 Communicate and Cooperate

6.7 Teachers' media use

6.8 Foster digital resilience

6.9 Parent counseling

6.10 Process adverse media experience

Children at the age of three years paint or draw pictures in the educational institution according to 82% of the interviewed teachers, more than 9 out of 10 children aged 4 to 6 years do this, and for young people at the age of 18 this is still true for 70%, according to the teachers. The example activity "making a flip book" takes place with children at the age of six (25%) according to the participating teachers, and this activity has a maximum of 38% for 9-year-olds, with a slight decrease after this age. Children start giving non-screen presentations at age 8 (43%). This curve increases to over 80% in the upper school years. The screen-based activities are implemented starting at age 8 (stop-motion movie), or even later, at 12 years, for the other two screen-based activities: from the age of 14 until the final age of 18 around a quarter of the teachers indicate that their pupils are putting these activities into practice in their lessons.
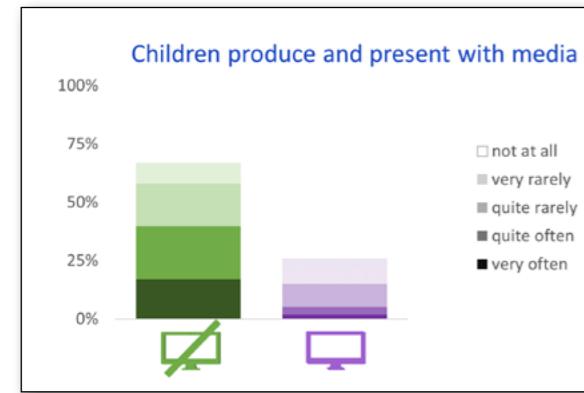


**Figure 36**  *Frequency of „producing and presenting" according to teachers without screen n=658, missing values=21, with screen n=652, missing values=27*

**Results: Which activities with or without using a screen are implemented in practice?** If one averages the answers of all Steiner Waldorf teachers from nursery to upper school, then it emerges that media without screens are used by children according to about 40% of the teachers. But almost one third of the respondents state that children do not use media without a screen at all in their class, or only very rarely, for purposes of producing and presenting. When it comes to using media with screens, the picture is completely different: three-quarters of respondents (74%) say that children using media for producing and presenting do not use screens at all. *Figure 36* illustrates that 9% of children using media with screens present and produce something rather rarely, and only just under 2% do so very often.
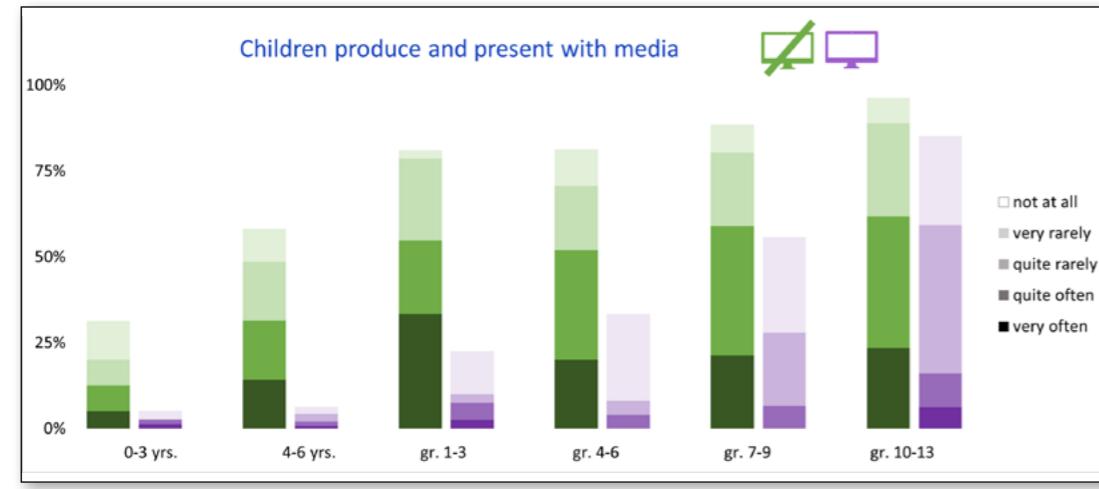


**Figure 37**  *Frequency of "producing and presenting" as reported by teachers by age group, without screen: total n=642, under 3 n=80, over 3 n=303, grades 1-3 n=42, grades 4-6 n=75, grades 7-9 n=61, grades 10-13 n=81, with screen: total n=636, under 3 n=79, over 3 n=300, grades 1-3 n=40, grades 4-6 n=75, grades 7-9 n=61, grades 10-13 n=81.*

Practice of media use from nursery to upper school. The breakdown by age group shows that, according to the Steiner Waldorf teachers, children from the over 3 age group produce and present very frequently to frequently with screen-free media. The proportion here is highest in the age comparison in grades 1-3 with 33% and is rated almost the same for grades 4-6 and 7-9 with 20% and 21% respectively. In

After a maximum of 84% for 13-year-olds, the curve drops to only 73% at the age of 18.

**Comparison:** Overall, the curves of the pupils are very similar to the curves of the teachers and parents. Only the heights and positions of the maxima are slightly shifted. Pupils tend to consider activities with screen media suitable for slightly younger age groups (a shift of a year or two) compared to the adult survey participants.
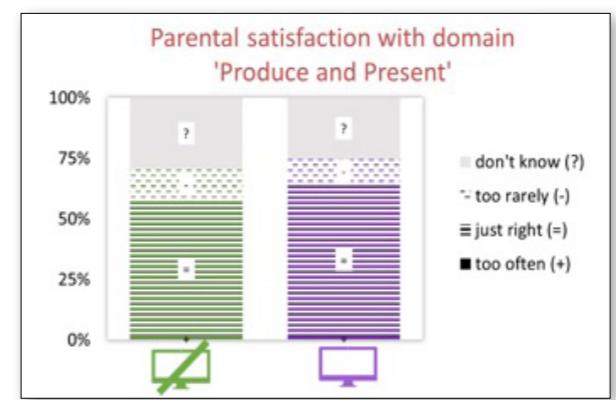


**Figure 42**  *Satisfaction with the domain "Produce and Present" as reported by parents, without screen n=3389, missing=104, with screen n=3389, missing=114.*

**Results: Parental satisfaction for "Produce and Present" activities for all ages combined**. The values in *Figure 42* are averaged for all parents surveyed from nursery care to upper school. The participating Steiner Waldorf parents demonstrate overall high satisfaction with children´s activities in the domain of producing and presenting at their children's educational institution (school or ECE setting). In both areas, producing and presenting with and without a screen, more than half of the parents are satisfied with the respective use of media ("just right"). Regarding media use with screens, even more parents are satisfied (63%) than for media use without screens (56%). However, for both activities (implementation with and without screens), around one third of parents state that they cannot provide any information on this topic ("don't know"). About 1% of the participating parents indicated that the respective media are used too often in the educational institutions, again for both screen and non-screen media. The parents' statements regarding the insufficient use of media are more or less the same. Just 13% of the participating parents state that media without screens are used too rarely, while 10% of the parents share this view when it comes to implementation with media using screens.
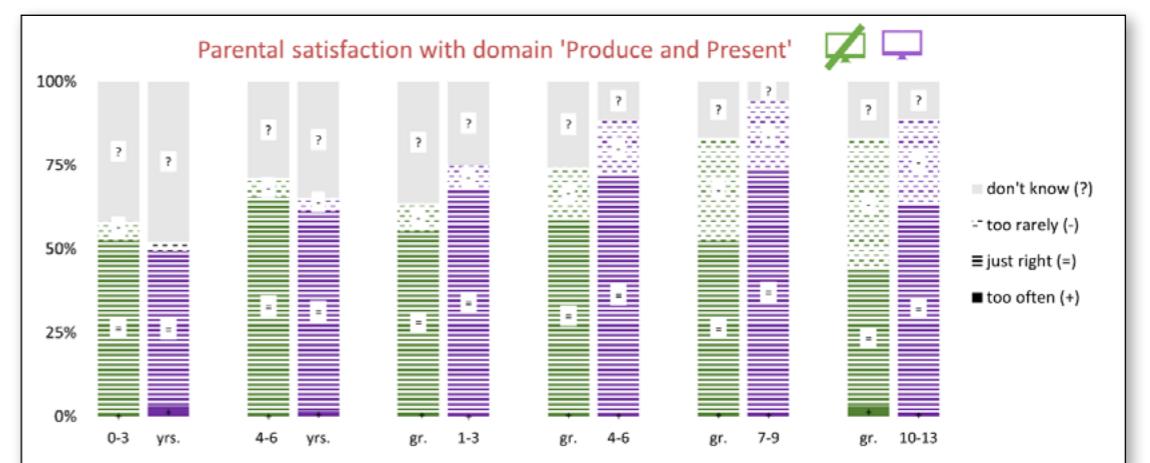


**Figure 43**  *Satisfaction with the practice of children´s "Produce and Present" activities in the educational institution according to Steiner Waldorf parents by age group, without screen: total n=3243, under 3 n=311, over 3 n=1056, cl. 1-3 n=833, cl. 4-6 n=466, cl. 7-9 n=346, cl. 10-13 n=231, with screen: total n=3262, under 3 n=308, over 3 n=1058, cl. 1-3 n=843, cl. 4-6 n=474, cl. 7-9 n=348, cl. 10-13 n=231*

grades 10-13, the share of producing and presenting with media without a screen shows another small increase: 23% of the participating teachers state that producing and presenting in class without screen media takes place very frequently, and a total of just under 60% of the teachers state that producing and presenting in class with media without a screen is rather frequent or very frequent.

On the other hand, media with screens seem to be used hardly at all in the ECE age group: 94% of the teachers state this for children under the age of 3. This hardly changes in the over 3 range. In grades 1-3, 77% of the teachers report that their pupils do not use screen media in class; in grades 4-6 it is 66% of the teachers and in grades 7-9 still 44% of the teachers report that their pupils do not use screen media in practice for producing and presenting. For grades 10-13, 14% of the teachers indicate that they never use screen-based media, however this is the age group rated as having the highest proportion (43%) of students making at least rare use of screen media. A very frequent use of screen media is stated by only 6% of the teachers for the competence domain "Produce and Present" in these last three school years. In comparison, in the age range grades 1-3, the teachers state that 5% of the children produce and present using screen-based media during class rather frequently.

Discussion of the teacher survey in the domain "Produce and Present". Steiner Waldorf teachers are characterised in the domain "Produce and Present" by an attitude toward media that advocates first starting with media without screens, and adding screen media significantly later. However, they do not express a blanket rejection of children's activities for producing and presenting with digital screen media in educational institutions, as is assumed in some publications (cf. Section 2.1). Unsurprisingly, the activity "drawing/painting pictures" is already indicated as very useful from early kindergarten age and this is also implemented very frequently, albeit with a slightly lower result curve. In addition, the result curve of the activity "drawing and assembling a flip book" stands out, although here there is already a significantly larger difference between the statement concerning suitability and the actual implementation. The other activities with and without a screen show a large difference between the teachers' statements on the suitability and the actual implementation in the kindergarten and/or school routine.

This divergence leads to the following considerations: With regard to screen-free activities, it can hardly be assumed that the teachers are not qualified to instruct activities in the domain "Produce and Present" in class or in kindergarten. Rather, a possible explanation for not implementing such activities seems to be that they are not a part of the daily work routine or are made more difficult by a tight time budget. It could also be that corresponding examples are not mentioned in the current Richter curriculum for teaching at Steiner Waldorf schools and in particular for block lessons.[50] Although this is not a binding regulation for Steiner Waldorf schools, it is a much-used inspiration for teaching practice. Thus, a kind of underlying "out of sight, out of mind" attitude would be a plausible explanation for these results.

On the other hand, the large differences in the purple curves allow for other conclusions to be drawn from the statements about a suitable use of screen media compared to the actual implementation of these practical examples. Here, it seems more likely that a lack of knowledge in instructing children to put these activities into practice is the cause, which also corresponds to the results of the teachers' respective self-stated further training needs (see Chapter 8). Other possible explanations include the lack of, outdated, or inadequate technical equipment at the schools. The activities using screen-based media that were queried as examples can only be implemented extremely unsatisfactorily without the appropriate technical equipment. Since the vast majority of Steiner Waldorf schools also prohibit pupils from using their own technical devices (at least smartphones, and in some cases tablets or laptops), the possibility of bringing one's own device as a viable concept is also ruled out[51]. This could be an alternative, but it would not guarantee uniform use of software, for example, which would make it difficult to work quickly, comparably and effectively with groups of pupils. All in all, it can be stated that the teachers surveyed see a high degree of suitability in the domain "Produce and Present" and that some activities are already being implemented, especially in the area of screen-free media education. This hardly seems surprising, since these are activities that provide a haptic and sensory experience and stimulate the children's own activity. The teachers involved in the domain "Produce and Present" are open to the use of screen-based media from grade 6/7 onwards and consider this to be a suitable activity.

**Results: Age-group-specific parental satisfaction**. The older the children, the more often parents rate children´s screen media use for producing and presenting in their educational institution as "too rarely" practiced, as *Figure 43* illustrates. Parents also rate media use without a screen as "too rarely" practiced, although proportionately either more or less so compared to use with screen media, depending on the age group. The vast majority of parents are satisfied with the use of media in grades 1-3, 4-6 and 7-9, expressing satisfaction with the implementation of the domain "Produce and Present" with regard to media with screens. In addition, it can be seen that the parents surveyed for children under 3, over 3 and in grades 1-3 stated "don't know" significantly more often. This answer option decreases significantly with increasing age of the children. Only 1% of parents surveyed indicated that their child uses non-screen media too often in the educational institution; only in grades 10-13 does this proportion increase to 3%. On the other hand, parents state that media using screens are used too often at almost 3% in the under 3 age group; in the other age groups, this value is around 1%.

**Discussion of Parent Survey on the domain "Produce and Present".** In the domain "Produce and Present", the Steiner Waldorf parents surveyed are characterised by rejecting the use of screen media for the nursery school and kindergarten ages as well as in grades 1-3, but then increasingly supporting the activity as the children and young people grow older. Thus, parents cannot be said to fundamentally consider screen media unsuitable for use of children in educational institutions, as is occasionally assumed in publications (cf. Section 2.2). Beginning in grades 4-6, but increasingly in grades 7-9 and 10-13, parents are of the opinion that screen media are used too rarely in the classroom. In these grades, parents are increasingly stating that they consider the use of screen media for producing and presenting in class suitable. This is because the proportion of those who stated "exactly right" is also high in these age groups. To put it simply, there are two opposing camps of opinion on this question.

**"Just right = satisfied"? And with what?** How can the answer option "just right" be interpreted? Because on closer inspection, this statement cannot be interpreted unambiguously. "Just right" can, on the one hand, refer to the quality of the implementation. On the other hand, it seems more plausible that "just right" refers to a high level of satisfaction with the frequency of implementation. Now the question must be clarified, how for example parents of nursery-aged children (0-3) come to report high satisfaction concerning their children´s screen-based media activities in kindergarten. To do this, a comparison is necessary with the results to the question what parents consider suitable at which age. Likewise, the survey findings from teachers about which activities the children at the respective age put into practice in the ECE setting must be considered. Plausible conclusions can be drawn by comparing the two results from the parents' and teachers' point of view. Thus, if 60% of the parents of kindergarten age children respond with "just right" to indicate their satisfaction with producing and presenting activities using screen media, this statement means that this relatively high percentage of parents finds it correct that screen media are **not used at the** kindergarten age, since again very few parents indicate that screen media are used too rarely at this age. Thus, the parents surveyed are extremely satisfied with the *non-use* of screen media in kindergarten. In contrast, the "just right" values for the use of screen media in the upper school indicate satisfaction with the use of digital media when comparing the results to those of parental attitudes and teachers´reports on practice.

**"I don't know" in the satisfaction statements:** The high number of "I don't know" responses from parents is surprising. This is all the more surprising the younger the children in question are. It is rather unlikely to assume that the parents surveyed for the nursery and kindergarten age are not confident enough to make a judgment. It is more likely that the parents with children this young have simply not yet dealt with the media competence queried here. This explanation seems all the more plausible if the child in question is the surveyed parent's oldest child. Thus, "I don't know" could be interpreted in the sense of "I haven't dealt with this topic at all yet, so I can't give any information about it". It can also be assumed that the parents have less insight into the group activities of their children in the under three and over three age groups in ECE settings, since many children of this age cannot yet report on their experience.

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50    During the entire Waldorf school period, the morning begins with the so-called main or block lessons. In a unit of usually 105 minutes, the school material is intensively worked through in alternating subjects over a period of three to four weeks, similar to the somewhat longer intensive subject blocks in some courses of study, such as the seven-week quintiles in the Hannibal model course of study at the Hanover Medical School, which are intended to enable intensive study of a subject instead of constant thematic jumping back and forth.

51    The concept of pupils bringing their own electronic devices to use at school is known as "bring your own device" (BYOD).

6.1 Produce and Present
6.2 Operate and Apply
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6.4 Inform and Research
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6.8 Foster digital resilience
6.9 Parent counseling
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6.10 Process adverse media experience

## Comparative and over-arching discussion of teachers vs. parents.

Below, we will first touch upon limitations to the validity of the findings, and then consider and discuss the differences and similarities between the answers in the parent and the teacher survey. Finally, we will discuss anomalies and unexpected issues that affect both target groups of the survey equally.

**Study limitations**. The MünDig study is a Germany-wide, quantitative-explorative study. Although a total of over 5,000 people participated in the Steiner Waldorf survey, the results do not claim to be representative. A more detailed discussion of the limitations on the validity of the findings due to the design of the study can be found in Section 10.4.

**Semi-qualitative data on the domain "Produce and Present".** From the texts typed in at the end of the questionnaire, here are some excerpts that concern the domain "Produce and Present" and can characterise the attitude represented beyond a quantitative survey:

*"Drama and role play, age-appropriate with reflection...."*

*"Since we deliberately do not use digital media within our institution, many questions were irrelevant to me.... However, we use picture books, paper and wax crayons on a daily basis, and modelling is done regularly..."*

*"Are round dances (e.g. Michaelmas round dance) with distributed roles in Steiner Waldorf kindergarten already role play/theatre? The question was unclear to me, in our kindergarten it is mostly the school children who slip into the roles, but sometimes even 4-year-old children. However, taking part is always voluntary."*

*"When using media, especially visual media, my experience is that material image carriers (printed pictures, pictures made by pupils themselves, blackboard writings, etc.) evoke a significantly higher level of attention and seriousness than projections, digital images, etc.. Presumably, the reality content is experienced as higher, even if the quality of reproduction is much lower."*

**Comparison**. When comparing the results of the teacher survey and parents, the first thing that stands out is that the results in *Figure 32*, *Figure 38* and *Figure 41,* on the question of which activities are considered suitable at which age, are very similar. The curves differ in details, but in principle the similarities outweigh the differences. Parents, pupils and teachers consider activities of producing and presenting without a screen to be suitable for younger children, and increasingly those with a screen for older children.

Continuing with a comparison of the figures, it is noticeable that the shape of the curves (rising with age or falling again after a peak) also coincides. This agreement between the curves of the parents and the teachers is so amazingly high that even the authors, when looking at the curves, keep asking themselves whether they had not been mixed up unintentionally. Such a high agreement was not expected. A possible explanation can be seen in the fact that especially for the competence domain "Produce and Present" the questioned activity examples required little explanation, so that a tendency towards a high familiarity of the example activities can be expected, or at least a higher familiarity compared to some other areas within the survey. In Chapter 10.2 we discuss another possible interpretation for the similar attitudes of all three groups towards media education: it could be, after all, that parents and pupils of Steiner Waldorf institutions experience a kind of indoctrination that makes them answer the questions similarly. However, the comparison with the (very similar!) results of the Montessori, the Steiner Waldorf and the Nature and Outdoor kindergarten survey makes this interpretation extremely unlikely.

**Similarity of the curves of ECE facilities and upper school respondents.** Because there are actually only minor differences between the extreme groups (by age) of ECE facilities and upper school, only a summarised figure is presented in the subsequent chapters 6.2 to 6.10 on the question of what the teachers and parents consider to be suitable activities. The conclusion from a number of studies on "technology acceptance", that early childhood teachers have lower technology acceptance than upper school teachers, cannot be sustained in the light of these findings. Both groups have a very similar attitude towards technology use of children in different age groups. If at all, the upper school teachers report an attitude of favouring a **later** starting age for screen-media use than the kindergarten teachers.

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For the competence domain "Produce and Present" in particular, it stands out that the two activity examples "drawing/painting pictures" and "giving presentations with blackboard pictures and/or index cards" are considered suitable up to the maximum possible age (18 years) at the end of the age axis in the survey. This leads to the consideration that despite the existing possibility of giving a presentation using PowerPoint, the corresponding analogue activities continue to be considered suitable. Only the screen-free example "drawing/assembling a flip book" experiences a decreasing relevance from the point of view of the teachers and parents of children from the age of ten. However, we must also look at the available example activities: the flip book is the exact analogue counterpart to a stop-motion film. This is queried in the same category as an example activity for media with a screen and retains a significantly longer relevance from the point of view of parents and teachers. One could therefore also say that the flip book is being succeeded by the stop-motion film.

**Attitudes and practice in relation to theoretical considerations**. The statements made by the Steiner Waldorf teachers are quite compatible with current didactic-methodological considerations in the field of media education. The step-by-step approach, i.e. first screen-free and then with a screen, holds manifold possibilities for a better understanding of basic principles of media worlds. If a flipbook is created in a first step, many principles and skills are tested and learned that are helpful for creating the succeeding digital equivalents, e.g. a stop-motion film. This is also in line with the approach of Steiner Waldorf institutions, which advocate a step-by-step, comprehensible practice differentiated into developmental stages. In other words, it could also be formulated as follows: the competence domain "Produce and Present" is almost predestined for the educational approaches in these institutions, and these conceptual considerations largely coincide with the results of the parents' and teachers' survey.

**Discussion on the methodological level:** Finally, we should briefly discuss the methodological level at this point. Why were only 6 out of 22 items selected? By not mentioning singing, dancing, making music, theatre, etc., was something important in the range of producing and presenting activities left out? Without a doubt, these exemplary activities can be assigned to the domain "Produce and Present", especially in connection with the desired promotion of creativity intended by putting such activities into practice. Ultimately, the following reasons are given for the narrower selection of example activities: knowing full well that the selection entails a narrow and inadequate coverage of the field, we dispensed with an even broader naming of example activities. Comparing common and established survey instruments in the field of media education such as the Monitor Digitale Bildung (Thom et al., 2018), the items of the MünDig study already represent an enormous expansion of the concept of media, which should still strive to enable being comparable to other results in the current scientific discourse on education in the digital age. . Finally, we would like to point out that many of the activities mentioned in the expanded item pool can also be assigned to other domains of competence. Thus, singing can be taken as a producing and presenting activity, but could also be assigned to communicating and cooperating. However, we were obliged to make a clear one-dimensional assignment of the activity examples in order to be able to ensure comparability with possible future surveys.

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224     Die Autor:innenangaben der Gastautor:innen finden sich im Anhang (s. Verzeichnisse).

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