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Article:	Education on The Path to Digital Media transition, A Perspective of Pakistani Education in 2030
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Abstract

Education sector in Pakistan lag in the age of media digital transition. The present study observed digital media challenges knocking at the door and the changes that required fulfilling the gap ensuing in this global world. The focus of the study was on the key question of which competencies students should acquire during their school education to be able to act self-determinedly and actively in a society that is continuously changing under the influence of digitalization processes. The sample was taken randomly from 68 experts from the education sector and education policy designers who were gathered in department of Education, IUB (Punjab) Pakistan, to design the national education policy 2021. A two-stage Delphi study sheds light on important aspects of digital teaching and learning in the school, training, university and continuing education sectors. It was found that Mobile devices (and apps for learning) are the most important technological trend that will shape digital learning over the next ten years (2020-2030). Overall, the majority of the experts do not expect any radical change or “disruption” with regard to learning habits and learning methods.

Keywords: Media Digitalization, Innovative Education system, Bottom to top up approach, Delphi technique, Educational digitalization.

Introduction and problem analysis

Education should be given keeping in mind the future needs of the learner. Present age is an age of transition and digital transition is happening at present which seemed to culminate lock stock and barrel of all the fields of life (Khan, 2010). Now education works under the conditions of digitality changed scenario. The present research focus is on the key question of which competencies students must face in the course of their schooling. They must face competition globally and regionally. A huge gap awaits them, and they should acquire such digital skills which are required to keep them alive in the competition not only in their country but also in the world (Rashid & Ratten, 2020). to be in a society that is under the influence of digitalization. This research would bridge gaps that are ensuing due to the present use of digital media all around. (Schulte & Budde, 2018) and be able to actively shape them. Linked to this are questions of (new) Organization of lessons with a view to the subject canon, the use of digital media, learning with and about digital media in the classroom and questions about the control of School development projects (Lang-Wojtasik, Erichsen-Morgenstern, & Stratmann, 2020).

In the 2021 National Education Report, a contribution was devoted to promoting media literacy (Habib, Khalil, Khan, & Zahid, 2021) with a focus on the Teachers' skills in dealing with digital media. The focus of national education seemed to improve the competences of the students (Organization, 2018). With the establishment of the digital Competence models for schoolchildren, the introduction of the mandatory digital exercise (Akram et al., 2020). Basic education in lower secondary level, the new establishment of the school network E-Education seemed to prevail the old traditional methods of learning and teaching (Salam, Yang, Shaheen, Movahedipour, & Zeng, 2017). COVID, 19 situations alarmingly switched physical interaction to digital media learning. With this exasperating situation it seemed that digital education increasingly gained importance where informal learning system prevailed the entire education sector of the world (Churiyah, Sholikhan, Filianti, & Sakdiyah, 2020).

During this Pandemic situation school system collapsed as schooling in Pakistani educational scenario did not owe media digital literacy (Butt, Mohammed, Butt, Butt, & Xiang, 2020). So, in the educational policy 2021 experts discussed the situation and concluded that the digital Basic education and the digital skills of the pedagogues must be included in the infrastructure and digital content (English & Papa, 2012). That is also part of this initiative School Network E-Education. With this foundation we turn to the two central questions that arise in the field of Place education under the conditions of digitality. The first question asked under the traditional understanding of education to be answered is the following: Which competencies our students need to get to grips with an increasingly complex, digitized World and in view of foreseeable global, ecological and social upheavals to find your way? It must be clarified which of these should be part of the lesson.

The second question that arises is how schools are doing in the age of digitization to change in oneself (should). This research addressed these aspects through the chosen focus and the specifications for this digital transition is taken under consideration. The situation was discussed with the experts with a conclusion that the organization of the learning content may be integrative with digital education as per demand and requirement of a separate subject or is different organizational variants expedient. The need analysis is required to subvert at what extent media ethics are normative. Foundation of media education about the changes to be represented is sensible to anchor.

Objectives of the research

The study Objective were:

- 1- to create clarity regarding the terms and their meaning for digitization.

- 2- To assess the modernization of the education system requirements in modern digital media, innovations in educational skill development.
- 3- To review role of digital media in the fundamental renewal of the educational system.

Treatment hypothesis: media as an effective factor

- 4- H1 The media lead to a change from externally controlled teaching to self-organized teaching
- 5- Learning: When learning with digital media, the individual can choose his or her learning pace, but also the control the processed learning content yourself.
- 6- H2 Media lead to a change in the role of learners and teachers: the teachers become advisors to learners who make their learning process increasingly independent.
- 7- H3 Media increase the global availability of knowledge and education: content and expertise, that were otherwise hardly accessible can be accessed worldwide mainly through the Internet be made.

Background of the study

The terms media education and media literacy has been aliased with the terms digital education and digital competence and their interrelationships are extensive (Gee & Hayes, 2011). The term media literacy is complex, and it is an intensive scientific discourse on the definition of these terms. Media education goes beyond the concept of media literacy because Media education does not focus on the relationship between people and media, but on that of people (Yousman, 2016). Nevertheless, Media education and media literacy do not have to be excluded if media education as the goal of media educational activity is considered to achieve it media competence (De Abreu, Mihailidis, Lee, Melki, & McDougall, 2017). Media education is a process in which the adolescent and the adult is critical throughout his life (Farrington et al., 2012).

On the occasion of National Education Policy Design Consultative workshops, 2021 selected education experts took an overview of the future of digital learning in 2030. A two-stage Delphi study sheds light on important aspects of digital teaching and learning in the school, training, university and continuing education sectors (Chatfield, Borsella, Mantovani, Porcari, & Stahl, 2017). Associated with this are questions of the (re) organization of lessons with a view to the subject canon, the use of digital media, learning with and via digital media in lessons and questions about the management of projects for school development. A total of 68 experts from all education sectors and from education policy answered the questions designed by the researchers.

The concept of media competence goes back to Dieter Baacke (1973) and was initially from the "communicative competence" (Heinecke, Berg, & Hinkofer, 2019) justified out. The term has gained increasing importance in since the early 1990s education policy debates and is still topical and often in use today (Hussain, 2014), (Bilal, Ahsan, Gohar, Younis, & Awan, 2012) and (Jamil, 2020).

Research Methodology

It is a qualitative research study type where 68 policy designers, stake holders, teachers from public sector and Madaris, educational ministry officials, policy implementors and students were selected randomly to partake in the discussion and answered the questions. Randomly selected sample of education experts took an overview of the future of digital learning in 2030. A two-stage Delphi study sheds light on important aspects of digital teaching and learning in the school, training, university and continuing education sectors. Against the background of the increasing digitization of education, where do the experts see the greatest challenges for the actors in the four education sectors? And what measures do you propose to master these challenges?

For this purpose, the respondents were presented with a list with a total of seven challenges for actors in the four educational sectors of school, training, university and further

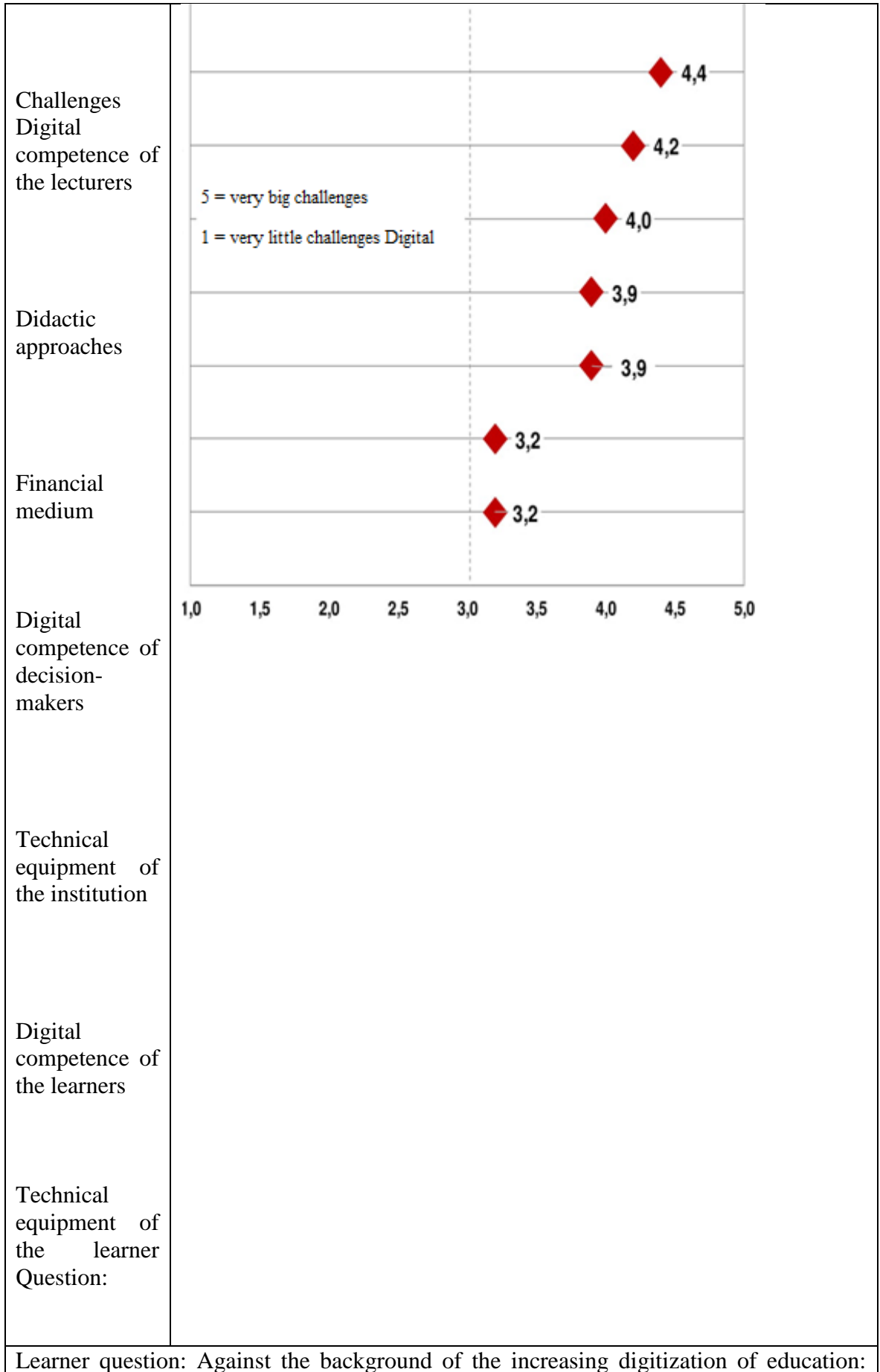
education, the importance of which they could weight on a 5-digit scale. A “5” meant that it was a “very big challenge”. In a first step, the results are presented using the example of the “School” sector. It is then examined where the experts see differences in the assessment of the challenges between the four educational sectors.

Data Analysis and Interpretation of Results

Overall, it can be seen for the school sector that all seven topics are viewed by those surveyed as rather high hurdles on the way to digitizing learning (see Fig. 1). A look at the results in detail shows that two challenges are particularly serious: The highest value is given to the "digital competence of the teachers" with a value of 4.4, followed by the "didactic approaches" (4.2 points). So, it is above all the teachers who will be decisive in the implementation of digital learning in the school sector in the coming years (Warrach, 2017). In the opinion of the experts questioned, their competence in dealing with digital media on the one hand and their appropriate didactic approaches on the other are decisive factors in the success of digital teaching and learning in schools.

Fig. 1 Challenges for actors in the "school" education sector

Challenges for actors in the "school" education sector
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Where do you see - for the next ten years - the greatest challenges for the actors in the school education sector? Please indicate your assessments on a 5-point scale: A 1 means "very low challenges", a 5 means "very big challenges", the values in between are used for grading.

| N = 57-58 | Data in mean values

The “financial resources” - for example to purchase the necessary hardware and software or to equip all schools with a functioning WLAN - are also rated as a major challenge by the respondents (4.0 points).

In the middle of the challenges in the context of the digitization of the school, the “digital competence of the decision-makers”, i.e. the people in politics and school administration who decide on the concrete measures and the pace of innovation as well as the “technical equipment of School "(3.9 points each).

The respondents see the least challenge for the digitization of school learning on the part of the pupils. Neither their “digital competence” nor the “technical equipment” available to them (3.2 points each) are important cliffs where the digitization of school teaching and learning can fail (Bawden & Robinson, 2002). A surprising result in view of the disenchantment of the “digital natives” in the recent education debates.

The comparison with the results for the three other education sectors yields largely identical assessments, as the overview table shows (cf. Tab. 1). In this table, the seven challenges are prioritized according to their evaluation by the experts. The color red stands for a great challenge, the color green for a minor challenge.

Complete agreement can be seen on the one hand in the two most important challenges - digital competence of the teachers and didactic approaches. According to the experts, (From, 2017) these obstacles to the digitization of learning play a particularly important role in all education sectors.

Tab. 1: Ranking of the greatest challenges for actors in the education sectors

	School	Education	University	Future Education
Teachers' digital competence	Red	Red	Red	Red
Didactic approaches	Orange	Orange	Orange	Orange
Financial medium	Orange	Orange	Orange	Orange
Digital competence of decision-makers	Yellow	Yellow	Green	Yellow
Technical equipment of the institution	Yellow	Orange	Orange	Orange
Digital competence of the learners	Green	Green	Yellow	Green
	Green	Green	Green	Green
	Green	Green	Green	Green

Technical equipment of the learners	
<p>Question: Against the background of the increasing digitization of education: Where do you see - for the next ten years - the greatest challenges for the actors in the respective education sectors? Please indicate your assessments on a 5-point scale: A 1 means "very little challenge", a 5 means "very big challenge", the values in between are used for grading. (N = 41-58)</p>	

The assessment of the factors “digital competence of the learners” and “technical equipment of the learners”, which from the point of view of the experts in all four educational sectors, do not represent a major obstacle to the digitization of learning, is also identical. The strong parallels in identifying the greatest challenge for the digitization of learning in the four educational sectors - the digital competence of teachers - suggested that the experts in a second survey wave (Delphi level 2) should be asked to name the most important measure for the respective education sector to increase the digital competence of the teachers.

Results

The results are briefly summarized here for each educational sector.

School:

- Incentives for further training / imparting skills during studies / didactic concepts for teaching / individual and action-oriented further training for teachers / free, binding further training for relevant content (Pettersson, 2018).
- Promotion of acceptance / "taking away the fear of digitization" / peer learning
- Better technical equipment / BYOD concept
- Cooperation between the federal government and the federal states / binding nature of teaching concepts / central decision-making and management of the qualification of teachers.

Education:

- Further training offers for masters / accompanying persons and integrated further training
- Promotion of acceptance among masters and trainers / acceptance on the part of companies
- Innovative didactic concepts for teaching at vocational schools
- Mobile learning media for cooperation between learning locations (vocational school and company)
- financing models
- Adaptation of training regulations / adaptation of trainer aptitude / modernization of training courses (Romero-Tena, Barragán-Sánchez, Llorente-Cejudo, & Palacios-Rodríguez, 2020).

University:

- Continuous qualification of the teachers / innovative low-threshold advanced training formats / didactic training of the teachers / "e-didactics" / media didactic support
- Convincing teachers / increasing acceptance by teachers and universities / incentives for participation in further training
- Financial resources / investments in infrastructure
- Consideration of digital competence in appointment procedures / greater weight of teaching in appointments
- Align university strategy with digitization (Romero-Tena et al., 2020).

Future education:

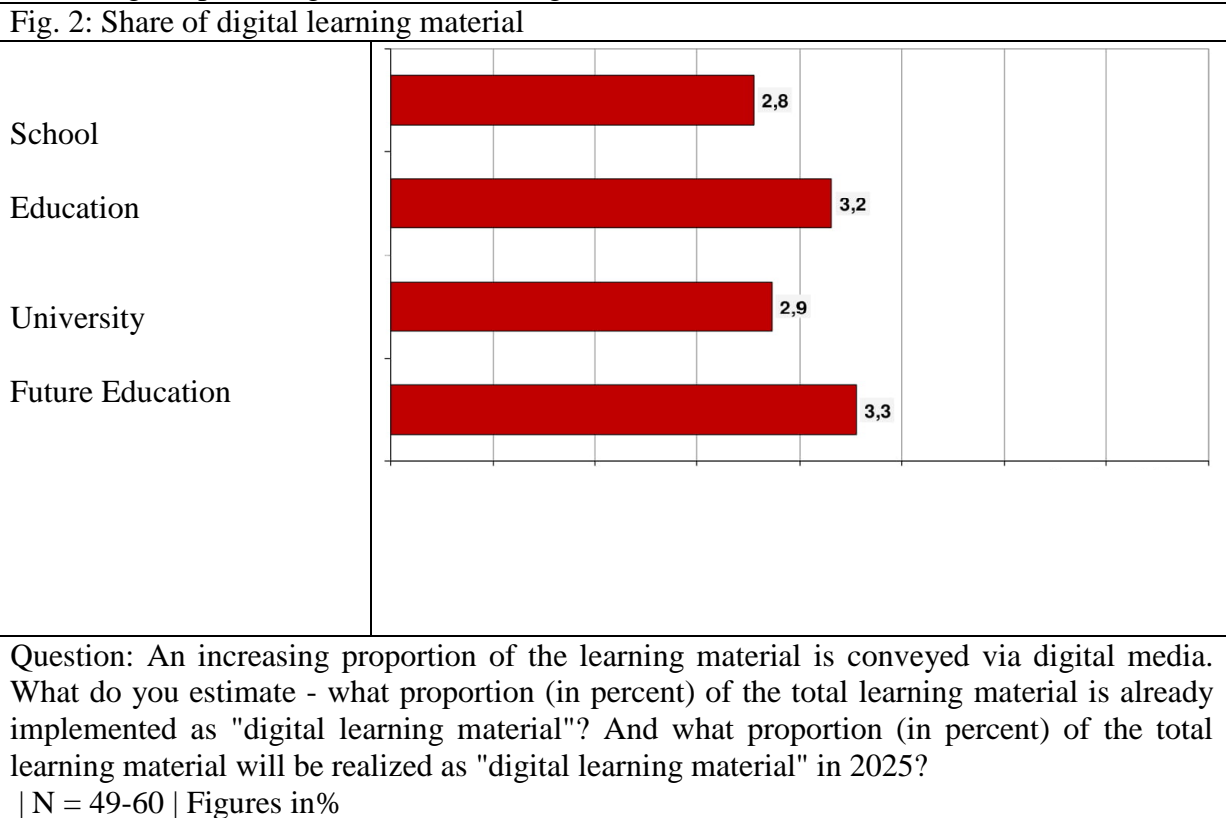
- Future education / qualification for blended learning / qualification of authors in large companies / media didactic support
- Increase incentive models for teachers / user acceptance

- Financial means / measures against the increasing cost pressure of the institutions
- Equipment of educational institutions
- Promote the role change of the lecturer from lecturer to coach
- Quality seal for good digital further training offers / quality assurance (Grosser, Bientzle, & Kimmerle, 2020).

Digitization of the subject matter

What proportion of the learning material is already being conveyed via digital media today - and how large will this proportion be in 2030?

The heavy school satchels of Pakistani primary school students are often used to illustrate the large backlog in the digitization of the Pakistani school system (Zaidi & Nasreen, 2016). The picture is intended to show how strongly the Pakistani learning culture is still shaped by printed learning materials. This raises the question of how large the proportion of digital learning material is that is conveyed via digital media today. This question was put to the experts for all four education sectors: school, training, higher education and continuing education. At the same time, it was asked to make a forecast for the year 2030 in addition to estimating the percentage for 2021 (see Fig. 2).



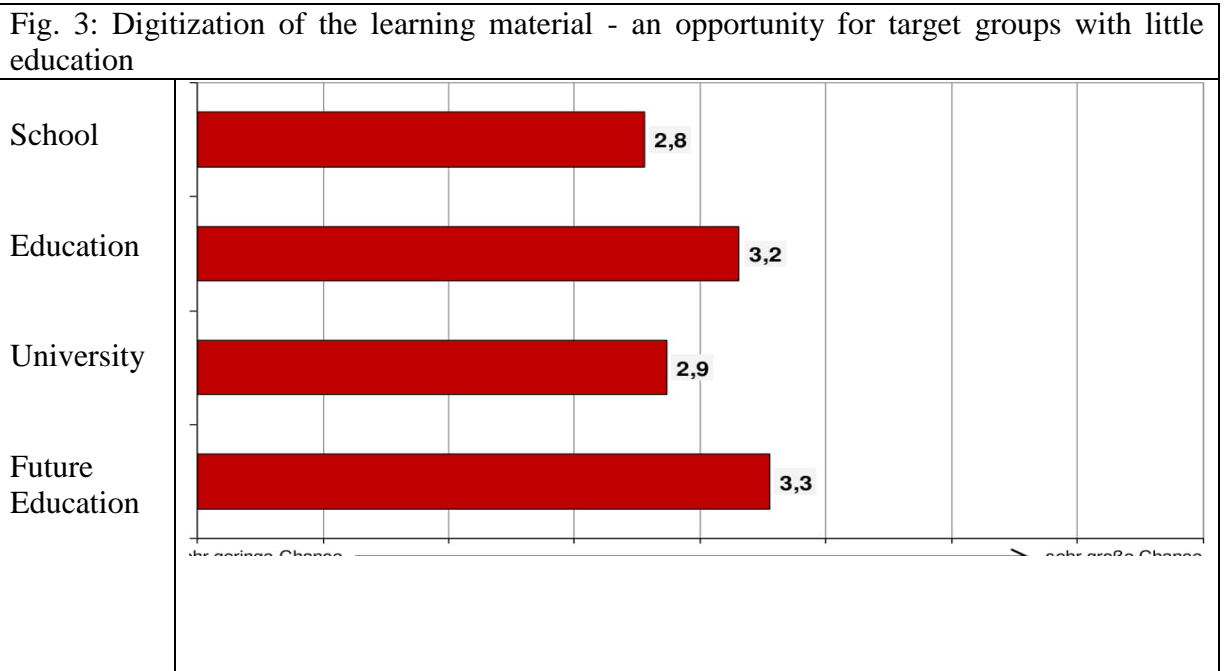
School (18.2%) and training (22.9%) are attested to have the lowest “degree of digitization”. In contrast, the respondents see a significantly higher proportion of digitized content in the total learning material in the higher education (34.8%) and further education (36.4%) sectors. But here, too, at the moment, the analogue media, especially textbooks and scripts, are clearly dominating - with almost two thirds of the material.

The proportion of digital learning content for the year 2030 is forecast by the respondents to be significantly higher. However, the degree of digitization of schools and training will still be less than half of the subject matter in ten years. That makes the school satchels mentioned a lot easier - the primacy of printed learning material in schools and training will not be overcome in ten years, according to the experts (Hassan, 2016).

Digitization as an opportunity for target groups with little education

Is the digitization of the learning material a suitable means to better reach target groups with little educational background?

The question of a corresponding “target group attractiveness” was also presented to the experts separately for the four educational sectors. The answer is rather sobering; Especially for schools and universities, the respondents do not see any particularly great opportunities to reach uneducated target groups with digital educational media (see Fig. 3). With an average value of 2.8 and 2.9 respectively, the experts rate the potential of digitization in these two educational sectors as rather low.

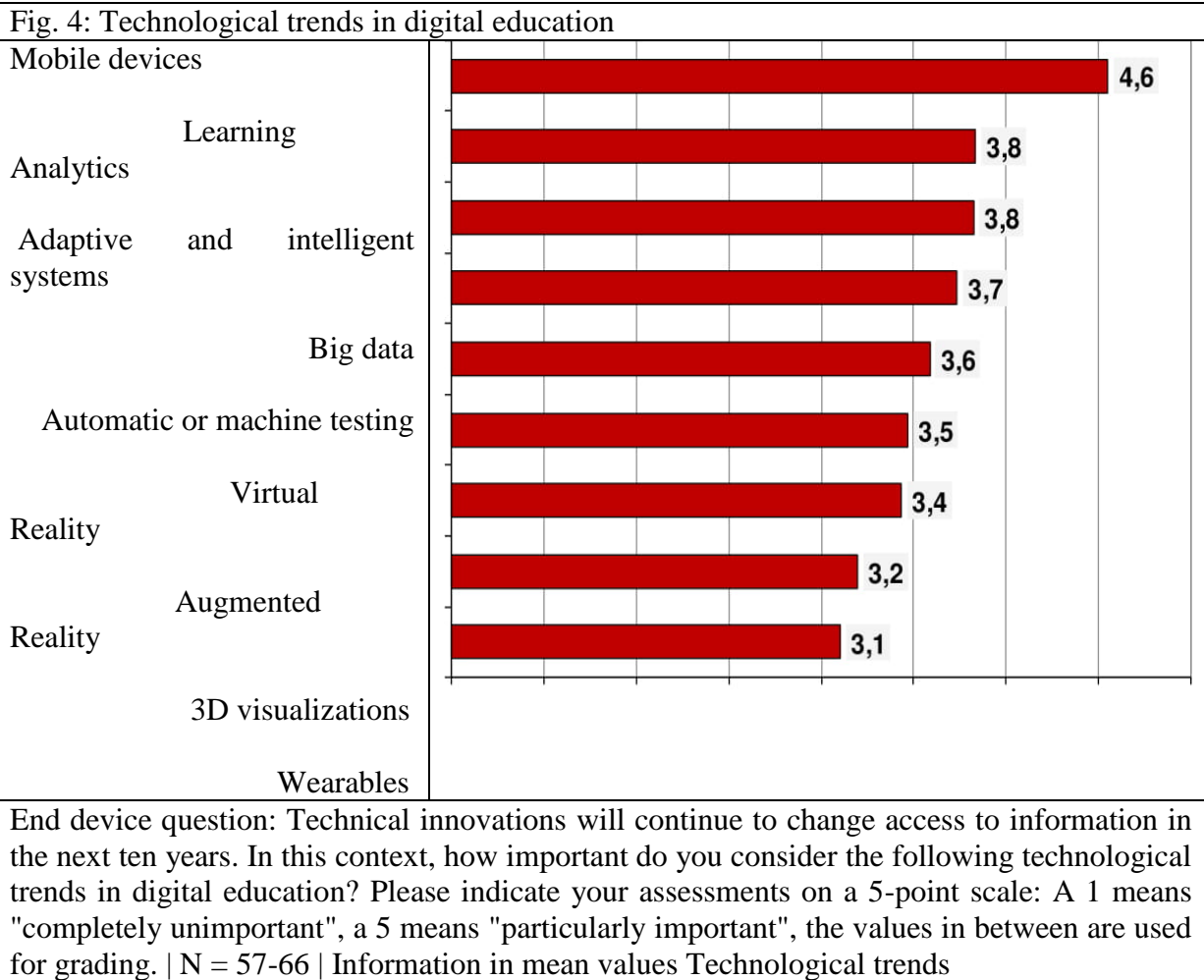


3,32,93,22,8 Further education, Higher education, Training School.
 Question: What do you think - how big is the chance of reaching uneducated target groups in the individual educational sectors through the digitization of the subject matter? Please indicate your assessments on a 5-point scale:
 A 1 means "very low chance", B 5 means "very high chance",
 the values in between are used for grading.
 | N = 58-63 | Data in mean values Digitalization

In training (3.2 points) and in the continuing education sector (3.3 points), the chances of reaching uneducated target groups through the digitization of the learning material are rated a little higher. This cautious assessment of the corresponding potential of digital media suggests that the experts take a more realistic and perhaps also disillusioned attitude towards such expectations (Chan-Olmsted & Wolter, 2018).

Technological trends in digital education

Search engines on the Internet, mobile apps or YouTube videos are examples here. Which technological trends do the experts believe will change education over the next ten years? In order to determine this, the respondents were presented with a list with a total of nine technological innovations (see Fig. 4).



The answers of the experts show great agreement in the selection of the "front runner" among the technological trends in digital learning: mobile devices. On the 5-point scale from 1 ("completely unimportant") to 5 ("particularly important"), "Mobile" receives an excellent 4.6 points on average.

The future importance of immersive technologies for learning is assessed to be somewhat lower, albeit still well above a "medium importance" (2.5 points): "Virtual Reality" (eg learning with VR glasses), "Augmented Reality" "(Such as the display of additional information about the environment) and" 3D visualizations ".

The bottom of the list among digital technologies for learning are "wearables", e.g. a smartwatch or a head-mounted display, with a value of 3.1.

In order to deepen the question of future technological innovations in the field of digital learning, the experts at the 2nd Delphi stage were asked about their arguments for the future trend, which by far has the most voices. The following question was asked: "On average, the majority of experts see the most important technological trend in mobile devices. If you share this opinion: What do you think speaks in favor of this assessment? If you do not share this opinion: What do you think speaks against this assessment? "

A minority of around 20 percent of the experts are against the thesis that mobile devices are the most important technological future trend. On the one hand, your arguments relate to pedagogical restrictions. With their focus on "learning in small portions", mobile devices are only suitable for a limited range of learning objects. There is also no evidence of their general suitability as a learning tool "despite intensive research work".

An important argument against the assessment of mobile devices as "technological future trend No.1" is the limited shelf life of future forecasts for digital tools and applications in

general. One of the experts questioned put it this way: "There could be new technical possibilities in the coming years that we don't even imagine today."

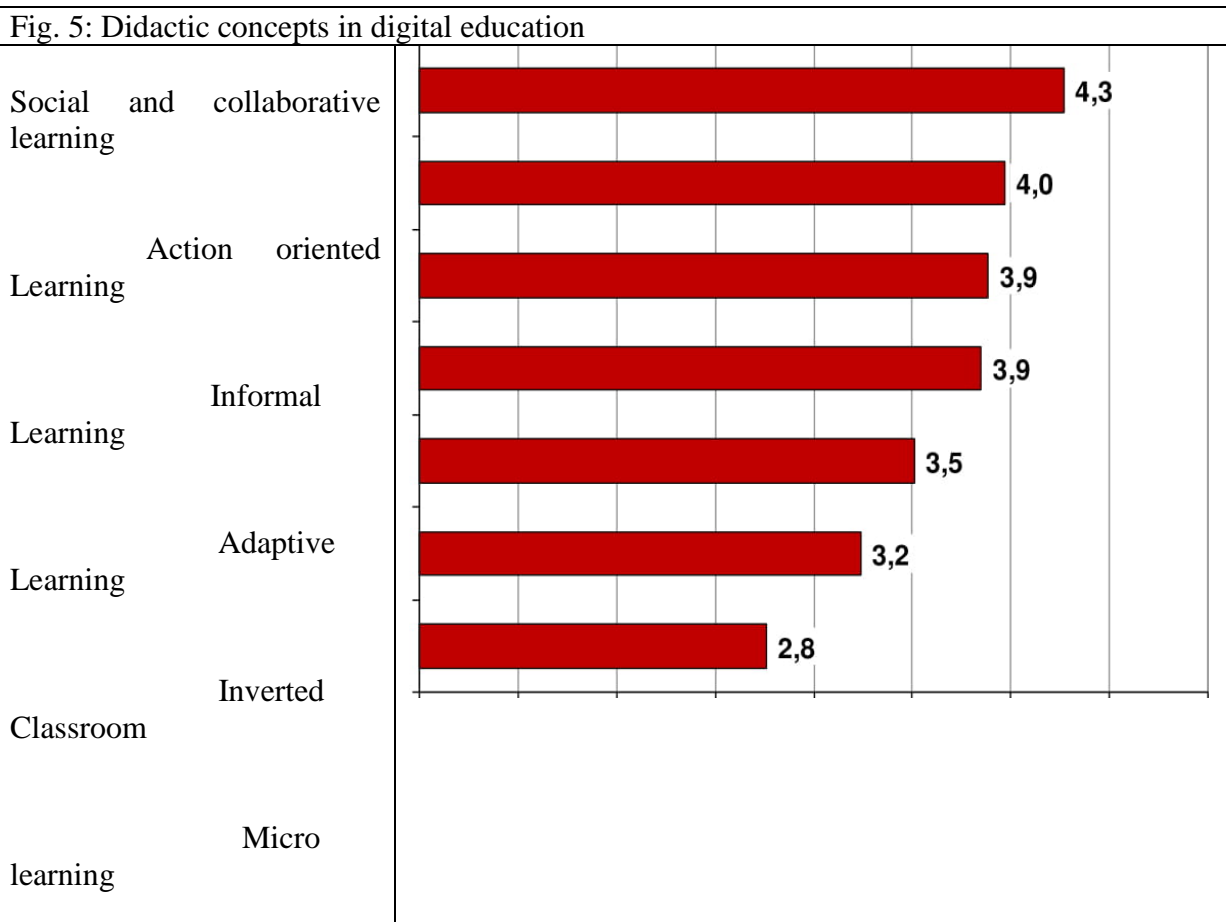
Overall, almost 80 percent of those surveyed agree with the majority opinion: Mobile end devices - usually understood as smartphones, not tablets or laptops - are primarily due to their ubiquitous availability and their widespread use in all social classes as the dominant learning tool Seen the future. In addition, "everyone can deal with it". Some respondents refer to the generation of "digital natives", "for whom the use of mobile devices is a matter of course." Due to the widespread use of smartphones, the concept of BYOD ("Bring your own device") is also appropriate that noticeably limit the costs for educational institutions.

The reference to the increasing convergence of end devices is also given to support this trend: "Everything is going mobile." This would make smartphones and tablets the "most important interface to the digital ecosystem".

Didactic concepts in digital education

Digital learning media generally offer the potential to change the teaching methods used by learning providers and teachers. What will change in terms of didactics in the next ten years? The experts consider social and collaborative learning with digital media to be the most important didactic innovation in the next ten years (see Fig. 5). They thus relate to a form of learning that has been practiced for a long time in school as well as in training and further education, but which is obviously controversial, as the analysis of the inquiry into the reasons for this preference shows (see below).

The didactic concepts "action-oriented learning", "adaptive learning" and "informal learning" follow in the next few places. The "Inverted Classroom" or "Flipped Classroom" concept is given a slightly lower mean value for the classification of importance. According to the respondents, the didactic methods "micro learning" and "live evaluation of teaching" have the least relevance.



<p>Teaching Evaluation</p>	
<p>End device question: Technical innovations will continue to change access to information in the next ten years. In this context, how important do you consider the following technological trends in digital education? Please indicate your assessments on a 5-point scale: A 1 means "completely unimportant", a 5 means "particularly important", the values in between are used for grading. N = 57-66 Information in mean values Technological trends</p>	

What are the reasons that “social and collaborative learning” will make the biggest leap forward in the next ten years - and what are the arguments against it? In the second wave of the survey, the experts were asked the following question: “The majority of the experts identified the most important didactic innovation in social and collaborative learning in the mean.

According to the respondents, a central argument in favor of collaborative digital learning is practicing learning processes as they are standard in the world of work and which are also considered the “natural” form of learning. At work, supported by digital media, you work in a team and accordingly learn in a team:

"Learning and comparing in groups is very important for learning success," notes one proponent of this concept.

"Digital learning works best when social aspects of face-to-face learning settings are 'reconstructed' there."

However, the framework conditions for social learning are occasionally criticized, including the lack of suitable didactic concepts for digital learning media.

But the bottom line is that the pro-arguments outweigh the demand in the second Delphi wave, which confirms the top position in the seminal didactic concepts.

Future scenarios for the digitization of learning

Which of the presented future scenarios for the digitization of learning in 2030 meet with particularly high approval - and which scenarios are viewed rather skeptically?

The experts questioned were presented with five statements for evaluation, outlining prospects for digital learning in 2025 (see Fig. 6). The scenario in which the sustainability of the business model of the educational publishers is questioned receives the highest approval ratings. A clear majority of those surveyed agree with the statement "By 2030 - similar to Amazon in retail - few large knowledge platforms will largely displace small specialist publishers."

Fig. 6: Digitization of learning - possible scenarios up to 2030



displace small specialist publishers.	
By the year 2030, virtualization, augmented reality and 3D technologies will make it possible for knowledge transfer and acquisition of skills - especially in the MINT areas - to take place almost exclusively "immersivity".	
By the year 2030, so-called "online Nano degrees" (as specialized, highly topical and short-term knowledge offers) will play a much greater role than traditional educational degrees.	
By the year 2030, it will be possible to provide every pupil, student or adult with exactly the learning content that corresponds to their personal competence, needs and learner profile.	
By 2030, knowledge will become a free good and will be available to everyone at any time, regardless of origin, income and status.	
<p>Question: In the following, we would like to introduce you to some possible developments in the course of increasing digitization of education up to the year 2025. Please state in each case whether you agree to these "scenarios" or not.</p> <p>N = 66-67 Figures in%</p>	

All other scenarios are only partially approved by the respondents. While the exaggerated prognosis that learning in 2030, especially in the MINT areas, will take place almost exclusively “immersivity”, i.e. supported by virtualization, augmented reality and 3D technologies, still almost half of those surveyed (45%) agree, the skepticism towards the other “future scenarios” is somewhat more pronounced. This applies to both the future importance of so-called "online Nano degrees", i.e. evidence of the successful completion of specialized, highly topical and short-term knowledge offers on the Internet (42% agreement), and the future of adaptive learning - that is the prospect that in 2030 every learner will be taught exactly the learning content "that corresponds to the personal competence, needs and learner profile" (39% agreement).

Finally, a radical prognosis for open content meets with greater skepticism, according to which “knowledge will become a free commodity and will be available to everyone at any time and place regardless of origin, income and status” by 2030.

Findings of the Study

The findings suggest that, from the point of view of the respondents in general education schools and vocational training, digital “disruption” in the sense of the extensive displacement of existing offers and formats is by no means to be expected. According to this, schools and training will still be "analogue" in ten years' time, while learning in universities and in adult education can mostly work digitally.

In the higher education and further education sectors, those surveyed expect a share of digital learning resources well over 50 percent in 2030 (higher education institution 60.4%, further education 63.4%).

Overall, the majority of the experts do not expect any radical change with regard to learning habits and learning methods.

Almost a third of the experts (31%) agree with this scenario, while the majority reacts skeptically. From the point of view of the great majority, at least this business model of

educational publishers - the sale of educational content, via whatever platform - will still be in place in ten years.

The digital competence of the teachers represents the greatest challenge for the comprehensive digitization of learning in all education sectors. The experts see the fewest problems on the part of the learners. Their digital competence and technical equipment do not represent an important hurdle for digital learning.

The schools and training sectors will still lag behind in the digitization of the learning material in 2030. From a fifth today, the proportion of digital learning material will increase to almost half. The experts for universities and further education predict the highest degree of digitization. Here, the proportion of digital learning material will increase from the current one third to almost three quarters within ten years.

3. The chances of reaching uneducated target groups better in the future through the digitization of learning materials are not rated very highly by the respondents. This applies above all to the school and university sectors, while the “participation potential” of digital media is rated somewhat higher in education and training.

4. Mobile devices (and apps for learning) are the most important technological trend that will shape digital learning over the next ten years. From the point of view of the Delphi participants, this is primarily due to the widespread use in all social classes and the ubiquitous availability of mobile devices.

7. Sales in the e-learning industry will grow more than 110 percent over the next five years (through 2020) if the forecast of Delphi attendees is correct. The most important reasons for this optimistic estimate are the cost reductions associated with digital learning in the medium term and the general trend towards digitization in business (Industry 4.0) and society.

Conclusion

It may be concluded in the light of discussion and results that the point of view of the Delphi participants, social and collaborative learning are considered to be the most important didactic innovation. From the point of view of the experts, a central argument in favor of collaborative, networked learning is that it can be used to practice learning processes that are standard in the world of work - and that are also considered the natural form of learning. This also contributes to the development of a central "21st Century Skill" - team competence. This is how one could summarize the future trend that met with the greatest approval from the respondents. The trend towards the "platformization" of business models in the course of digitization, which can be seen in many other industries, is therefore also a problem for educational publishers, especially the small ones among them, The scenarios according to which the future belongs to “adaptive learning” or that digitization ensures that “knowledge becomes a free good”, find less approval. Overall, the majority of the experts do not expect any radical change or “disruption” with regard to learning habits and learning methods. Collaborative learning is also considered a "21st Century Skill", i.e. this competence is becoming more and more important in connection with the topic of "Industry 4.0". With a view to creating an interaction that is conducive to learning, it becomes conclusive that the use of the media does not represent an automatism of the lesson development, but a learning conducive to actively conceptualize and establish change and matching relationships by a teacher

Recommendations

The study recommends following postulates as an outcome of the research: Knowledge platforms instead of classic educational publishers. The trend towards "platformization" of business models, which is evident in many industries, is on the way. From the point of view of the majority of experts, digitization also poses an increasing risk for educational publishers, especially the small ones among them. The experts also attach

growing importance to the use of learning analytics and recommend the other artificial intelligence methods for the digital education of the future.

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