Digital Technology

Background

The summary below presents the research evidence on digital technology in the Arab World context.

The Teaching & Learning Toolkit focuses on impact on outcomes for learners; it presents an estimate of the average impact of digital technology on learning progress, based on the synthesis of a large number of quantitative studies from around the world.

This page offers a summary and analysis of individual studies on digital technology in the Arab world. In contrast to the Toolkit it includes studies which do not estimate impact, but instead investigate the implementation of interventions and how they are perceived by school leaders, teachers and students using a range of research methods. This information is valuable for school leaders and teachers interested in finding out more about particular examples of digital technology interventions in the Arab world.

Summary of the research in the Arab World

Digital technologies in the Arab world are recognized as tools to support the student-centered approach in the classrooms. However, most of the studies that looked into this topic explored the perceptions and attitudes of teachers rather than examining the impact of technology integration on students' academic outcomes. More particularly, the bulk of research in this area investigated the factors that are associated with technology integration in K-12 classrooms.

For the past decade, studies like Almekhlafi and Abulibdeh (2018), Al Bataineh and Anderson (2015), Ihmeideh (2009), Khlaif (2018), Khasawneh and Al-Awidi (2008), and Nusir et al. (2012) investigated teachers' perceptions about technology integration in K-12 classrooms. A general consensus is made around the low levels of integration and showed consistent perceptions about the barriers hindering such integration. Limited ICT resources was found to be the main factor that is negatively impacting teachers' attitudes and readiness to integrate technology in

their instruction. Through semi-structured interviews with 15 middle school teachers in Palestine, Khlaif (2018) revealed that lack of technical support, instructional assistance, and ICT infrastructure influenced teachers' attitudes to accept or reject tablet use in classrooms. Similarly, through a mixed-method study, 26 English teachers from 9 Middle schools in Lebanon, reported that lack of ICT tools, problems with electricity and Internet connection, and absence of formal teachers' trainings were the main obstacles (Chaaban & Moloney, 2016). Lack of ICT resources is not only influencing teachers' attitudes and beliefs but limiting the implementation of student-centered teaching approaches. In a comparative study done by Baroudi and Rodjan-Helder (2019), limited ICT resources hindered K-12 teachers' implementation of inquiry-based instruction in science classrooms in Lebanon and United Arab Emirates.

On another note, in a systematic review done by Tamim et al. (2015) it was found that majority of computer led initiatives in the Arab countries were driven by the tablet hype rather than by educational frameworks or research-based evidence. As such, there is clear absence of a government plan for technology integration in K-12 schools in both rich and poor contexts in the Arab world (Chaaban & Moloney, 2016; Bingimlas, 2017; Shawareb, 2011). This is viewed through principals, teachers, and parents confusions about the usage of these tools, lack of ICT resources in schools, and absence of ICT policy and of teachers' professional development. Therefore, Al-Awidi and Ismail (2014), Chaaban and Moloney (2016) and Randeree and Rashdi (2010) suggested to involve teachers in the decision making of the school plan and include a set budget for buying and maintaining technological tools. Ministries of Education are recommended to conduct in-service training on using computers in appropriate approaches to help teachers in planning learning activities (Shawareb, 2011). Universities are recommended to design practical training programs for preservice teachers to introduce them to ways of using computers in teaching and about the safety and security issues involved in students' computer use. Practitioners are requested to provide teachers with guidelines enabling them to select developmentally appropriate software that enhances children's learning and to avoid software that adversely affects children's development (Al-Zaidiyeen et al., 2010).

In light of the above, teachers expressed their confusion and negative attitudes towards ICT integration and the extent to which they use Web 2.0 applications is somehow moderate (Almekhlafi & Abulibdeh, 2018). Some believed that computer use, particularly among early years, could be detrimental to their health and development and could lead to poor social relationships, isolation, impaired vision, inability to focus, poor attention spans, and imitation of aggressive behaviors. Therefore, teachers were in favor of outdoor play and the use of tangible objects, such as clay, sand, water, and paste for younger students (Alkhawaldeh et al., 2017). Others did not have a clear understanding about the advantages and benefits of technology integration in the teaching and learning environment. Despite these obstacles, studies done in the Arab world provided evidence of the advantages that technology integration at K-12 classrooms holds towards students cognitive development and personal skills. For example, in an experimental study done by Shawareb (2011), kindergarten Jordanian students who used computers in the classroom did better on the fluency, elaboration, and originality dimensions when compared with the control group. Their creative thinking abilities improved better than those who did because they were able to create new ideas about what they learn by using various colors, shapes, and all things available by the computer. Furthermore, students in the experimental group who created their digital stories and presented them to their peers in the control group showed greater effect on their writing performance (Seifeddin, 2015). In another study done by Bataineh et al. (2018), both quantitative and qualitative data showed that tenth-grade students' communicative skills in oral and written English were significantly better when they used e-mail- and WhatsApp-based instruction over eight-week period. Furthermore, using WhatsApp improved their collaborative engagement in learning through and developed their self- and peer-reflection and affected both their self-confidence and written performance. Not only that, researchers found that students became more responsible in making decisions for their learning, became autonomous and self-directed learners. All of these advantages were to happen whenever teachers related the computer activities with the curriculum.

Teachers who implemented the flipped classroom approach using instructional videos on eighth-grade students developed their higher order thinking skills, that is, applying, analyzing, and evaluating when compared with the control who was

given direct instruction (Almasseri & AlHojailan, 2019). Furthermore, using multimedia interactive educational tools and digital gaming to teach mathematics improved students' performance when compared with their peers who used traditional methods of teaching (Alkhawaldeh et al. 2017; Yamani et al., 2013). These students experienced new range of skills and ideas that were not possible to experience using traditional methods of teaching. Younger pupils were able to spell words and familiar phrases and learn numeracy skills and concepts, such as counting, classification, comparison, addition and subtraction, and distinguishing between shapes, colors, and sizes. Additionally, it was noticed that use of technology facilitated the project-based learning which in turn increased students' collaboration. Furthermore, using multimedia in math class enhanced methods of teaching and attracted students' attention span and increased their ability to focus, self-confidence, drive to learn, and hand-eye coordination.

Although nowadays ICT seems to play a fundamental role in and out of school, there is a need to develop more empirical studies in the Arab world to know the effect that digital technologies have on academic success. Empirical research is also needed to look at the effectiveness of the use of ICT for education in conflict-affected zones. To increase the generalizability and reliability of results, researchers will need to conduct longitudinal studies with appropriate designs and sampling in their studies.

Arab World evidence

Digital technologies in the Arab world are recognized as tools to support the student-centered approach in the classrooms. Teachers who integrate the use of technologies in their instructional practices succeed in engaging students and ensuring an interactive learning environment. Despite the limited research on ICT integration on students' academic development, qualitative and quantitative studies provide evidence that students who use technology in their learning became more responsible in making decisions for their learning, more autonomous and self-directed learners, and their higher order thinking skills were developed. For example, in an experimental study, Jordanian kindergarten students who used computers in the classroom did better on the fluency, elaboration, and originality dimensions when compared with the control group Studies have found that limited ICT resources, problems with electricity or internet connection and lack of government plans for ICT integration have been barriers to

the implementation of Digital Technology approaches across the region. Others have suggested for teachers to be better prepared to integrate technology in their classroom through engaging them in formal training – either as part of preservice preparation programs or through continuing professional development. Professional development providers, are highly recommended to consider the conditions for effective teacher training relevant to the local context. Developing parents' awareness through workshops may be another effective way of increasing the effective utilization of ICT tools in the learning off their children.

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Search Terms

Digital technology; word processing computer/educational technology; information technology; online learning/ e-learning; computer assisted instruction; information and communication technology; ICT; computer gaming; simulation; virtual reality; multimedia' virtual classroom; tablet; smartphone; mobile learning' computer software; computer application; blended learning; web-based.

Databases searched

Academic Search Complete
ERIC (EBSCO)
Education Source
Google scholar
ProQuest Central
PsycINFO