

**Learning with a Personal Laptop from  
the View Point of Students and  
Graduates: Attitudes and Perceptions  
in a Longitudinal Study and  
Implementation of Information  
Literacy**

**Tal Berger-Tikochinski**

**School of Education**

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## **Abstract**

Increased accessibility to mobile technologies has contributed to the proliferation of 1:1 programs worldwide. The number of such programs has increased over the past decade, mostly due to the availability of technological devices and their affordability. As these programs are expected to multiply, it is important to further understand their effect on students.

This five-year study followed a 1:1 personal laptop program. The research population consisted of three groups: The first group comprised 1:1 program students: junior high school students from one urban school in the center of Israel, from a medium socioeconomic background. The study included 770 students in Grades 7 to 9, between 2009 and 2013. The second group comprised 1:1 program graduates: high school students who participated in the 1:1 laptop program when they were in junior high school. The study included 24 high school students. The third group comprised junior high school students in Grades 7 to 9 from another urban school in the center of Israel, who did not participate in a 1:1 personal laptop program (N = 109).

The research was conducted using a mixed methods design, employing three research tools: 1) A quantitative questionnaire for 1:1 program students. 2) A semi-structured interview with 1:1 program graduates. 3) A complex, computer based learning task, requiring implementation of information literacy skills. The task was intended for junior high school students participating in a 1:1 personal laptop program and a comparison group that comprised junior high school students learning without a personal laptop.

The purpose of this study was to examine learning with a 1:1 personal laptop in two dimensions: A theoretical dimension—the impact of student's attitudes, subjective norms, and perceived behavioral control on their intention to learn with 1:1 laptops—based on Azjen's (1985) Theory of Planned Behavior (TPB). The second, a practical and methodological dimension—focusing on the practical contribution of a 1:1 personal laptop program to the implementation of information literacy skills in aspects such as searching, evaluating, and presenting information.

The first three research hypotheses were based on the Theory of Planned Behavior (Ajzen, 1985). These hypotheses assumed that students' attitudes toward learning with a personal laptop, school norms towards learning with a personal laptop, and students' self-efficacy would positively influence their behavioral intention. Behavioral

intention is defined in this study as intention to learn with a personal laptop, and implement information literacy skills. Findings show that all three hypotheses were confirmed.

The fourth and fifth research hypotheses regarded the impact of the duration of learning in a 1:1 personal laptop program on students' attitudes and perceptions towards learning with a personal laptop. Students' attitudes and perceptions were assumed to be more positive at the end of junior high school (9th grade) than its beginning (7th grade). These hypotheses were not supported, as findings showed students' attitudes tended to decrease between 7th to 9th grades.

The sixth hypothesis assumed that students' perception of school norms towards the use of a personal laptop would positively influence their intention to learn with a laptop at the end of junior high school. This hypothesis was not supported.

The seventh hypothesis assumed that students' attitudes towards learning with a personal laptop, school norms, self-efficacy, and behavioral intention would be more positive among students who participated in the 1:1 program at a more advanced stage (i.e., after the program had started), compared to students who participated in the earlier years of the program. This was hypothesis confirmed. Findings show that students' attitudes increased over the years: The attitudes of students who started the program at a later stage were more positive than those who began earlier.

The eighth hypothesis assumed that students learning with a personal laptop would demonstrate a higher level of information literacy skills than students learning without ICT. This hypothesis was not supported.

Findings from interviews with the program's graduates showed that the laptops were used in a blended learning model, which combined personal laptop use and traditional learning, using textbooks and paper notebooks. Graduates reported implementation of information literacy skills, such as searching, assessing, summarizing, and presenting information. There was some disagreement among the graduates as to whether these skills were studied explicitly, and to what degree of depth. Graduates also compared the learning practices in the 1:1 program to those they experience in high school, and claimed that students in the 1:1 program had an active role during the lesson, while in high school they were more passive. However, some graduates thought that since high school learning was focused on preparing students for their matriculation exams, which do not require laptops, there was no further need to use a laptop at school.

The study has a theoretical contribution, in establishing the use of the Theory of Planned Behavior (Ajzen, 1985) to explain students' intention to learn with a personal laptop in a 1:1 program and implement information literacy skills. Findings also revealed several additional factors that influenced students' attitudes towards learning with a personal laptop: students' age, the importance of the continuity of the 1:1 program, and the importance of constant updates of the program.

The methodological contribution of this study is the development of a complex learning task as well as validating an analytical rubric to measure the degree of students' information literacy skills implementation. Another contribution of the study stems from its longitudinal research design. This long-term study enabled the examination of various trends throughout the years of the 1:1 programs' operation. In addition, the research population—which included 1:1 laptop program students, 1:1 program graduates, and junior high school students learning without a laptop—enabled the findings to be based in a broader context within the education system. This research has implications for educators who are interested in implementing a 1:1 program, or those who are currently involved in one. Findings can assist in planning and operating similar programs.