

Magic Learning Pill: Ontological and Instrumental Learning in Order to Speed Up Education

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Abstract The purpose of this research is to investigate the phenomenology of learning — people’s attitudes toward their learning experiences that have inherent worth in themselves (i.e., *ontological* learning) or have value outside of the learning itself (i.e., *instrumental* learning). In order to explore this topic, 58 participants from the U.S., Russia, and Brazil were interviewed with a central question derived from the science fiction writer Isaac Asimov’s short story “Profession”: whether participants would take a “Magic Learning Pill” (MLP) to avoid the process of learning, and instead magically acquire the knowledge. The MLP would guarantee the immediate learning by skipping the process of learning while achieving the same effect of gaining skills and knowledge. Almost all participants could think of some learning experiences for which they would take MLP and others for which they would not. Many participants would not take MLP for ontological learning, which is learning experiences that have inherent value for the people, while they would take MLP for instrumental learning, which is learning that mainly serves some other non-educational purposes. The main finding suggests that both instrumental and ontological types of learning are recognized by a wide range of people from diverse cultures as present and valued in their lives. This is especially significant in light of the overwhelmingly instrumental tone of public discourse about education. In the context of formal education, ontological learning was mentioned 35 times (28.0%) while instrumental learning was mentioned 74 times (60.2%). Although ontological learning was often mentioned as taking place outside of school, incorporating pedagogy supporting ontological learning at school deserves consideration.

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...a job whose effect and aim are to save work cannot, at the same time, glorify work as the essential source of personal identity and fulfillment (Gorz 1989, p. 88).

Paradoxically, the ideology of conventional education is anti-educational. It desires to shorten, speed-up, and if possible eliminate education all together. In public discourse, education is often viewed as an annoying, painful, time-consuming, and expensive but a necessary evil that does not have an intrinsic value. Politicians often justify education by national economic competitiveness. Financial advisors urge parents and students to select their college education based on the return on investment paid by the future job — economic security and prosperity. Most people seem to believe that academic education is instrumental. It mainly serves purposes outside of education itself: economy, societal reproduction, social justice, upward mobility, social cohesion, babysitting, democracy, citizenship, social cohesion, patriotism, nationalism, moral pro-social character, rationalism, critical thinking, creativity, tolerance, ideological loyalty, liberation, and so on (Bennett et al. 1999; Dewey 1997; Freire 1998; Green et al. 2006; Labaree 1997, 2010). However, all these goals, by prioritizing educational outcomes over the intrinsic values of educational process, are instrumental. If and when these goals are achieved, education, as a medium to reach success, is no longer needed.

There have been many efforts to shorten, intensify, and soothe instrumental education: “optimize learning,”¹ speed-up learning, intensify learning, condense learning, shortcut learning, use of technology, shift it to earlier ages to let more learning occur, sugarcoat learning, make learning more entertaining, motivate learning, force learning, condition learning, manage learning, diminish pains and frustration of learning, and so on (Larkin 2002; Ramey and Ramey 2004; Tadepalli and Natarajan 1996). From these perspectives, education, like a bitter medicine, has to be tolerated only because of its extrinsic values. Education is a mere vehicle to reach a desired destination. But, is it true that education is essentially instrumental and does not have intrinsic value for people? Or if it has inherent value for certain groups of people, are these people a very thin minority of some kind of small elite? Does such a thing as education for education sake, education as a basic human desire (if not a drive), exist and if so, does it exist on a mass scale?

The purpose of this research is to investigate people’s subjective attitudes to different learning experiences. Specifically, we are puzzled by our prior personal observations that people of diverse backgrounds (including educators) in different cultures have an implicitly negative attitude towards learning. They often try to shorten time spent on learning if the result would be the same – so called “optimized learning.”

¹ Although learning can be optimized in many different ways, in our observation on the literature and research in press by the fifth author, it is often referred to or aimed at shortening the time spent on learning (Hampel 2018, forthcoming).

Learning, in this case, is what we consider “instrumental learning”² — learning which mainly serves some other non-educational purposes. On the other hand, some people seem to have learning experiences that they do not want to shorten. Instead of considering learning as a virtue-less task, they value the process and experience, and might even want to extend them. This is what we call “ontological learning” — learning experiences that have inherent value for the people fulfilling their life (Packer and Goicoechea 2000).³ The question for us is what makes the difference in people’s perceptions of their learning experiences in different cultures.

To answer this question, we interviewed 58 people of diverse gender, socioeconomic status, ages, educational levels, professions, and so on from three cultures: the U.S., Russia, and Brazil. The selection of the participants was opportunistic based on their availability for us and on a snowball effect. Our interview questions were open-ended and centered on whether or not a research participant would take a “Magic Learning Pill” (MLP) that guarantees the same effect of gaining skills and knowledge without going through the learning process at all. These questions were suggested to the first author by science fiction writer Isaac Asimov’s short story “Profession” (Asimov 1959). In his short story “Profession” (1959), a famous American science fiction writer, Isaac Asimov, envisioned a future society in which education is replaced by a special modification of people’s brains. However, as the story unfolds, it shows the limitations of this approach because it cannot account for the development of new things and events or solve emerging previously unknown problems in the society. Small elite of innovators and inventors of new technologies, practices, and solutions is needed. The criteria for selection of the small elite are the following in the story: 1) their brain is not modifiable in a predictable way, 2) they like to innovate, and 3) they love to learn (even when their learning is actively discouraged).

Inspired by Asimov’s imaginary experiment of education (so common in physics!, see Kumar 2008), with assistance of then undergraduate student Daniella (Muller, Eilif) Baker (the second author), Eugene Matusov (the first author) conducted a study of instrumental and ontological learning. Baker and Matusov asked people the following hypothetical questions: “Imagine that scientists invented a Magic Learning Pill so that people can learn instantaneously what has been known in the past and become skillful in any area of known practice. The result of this Magic Learning Pill is the same as traditional learning. For what kind of learning you may want to use the Magic Learning Pill and what kind of learning you may reject using the Magic Learning Pill? Why?” We explained to our research participants that our focus was not on a technical or even

² In their notion of self-determined motivation Deci and his colleagues define 4 phases of extrinsic motivation that progressively lead to autonomous self-determination of instrumental learning. For example, this is how they defined “identified regulation by personal importance” (the phase 3), “An example of an identified regulatory process might be students who prepare very hard for the college entrance examination because going to college is personally important to them. These students study hard because doing well is instrumental for an important self-selected goal. The behavior is extrinsically motivated because it is instrumental, but it is relatively autonomous-because of the person’s having identified with its value and regulation” (Rigby et al. 1992, p. 170).

³ Packer and Goicoechea define ontology as “the consideration of being: what is, what exists, what it means for something— or somebody—to be” (p. 227). Ontological learning is driven by intrinsic motivation (Ryan and Deci 1996), although intrinsic motivation alone is not enough as a learner seems to have to place additional value on the experiences driven by intrinsic motivation.

psychological possibility for shortening learning experiences but on the desirability of that shortening.

We started the interviews by first asking about participants' past learning experiences. They would tell us about different experiences that were happy, sad, useful, etc. After talking about some of those experiences, we would ask if instead of going through the learning experience, they would want to achieve the same learning outcomes (i.e., knowledge, skills) by just taking a Magic Learning Pill.

In this article, we present our findings regarding the participants' reports about their instrumental vs. ontological learning. We do not discuss cultural differences and similarities in their experiences and perception of learning (see, Eilif 2004, for this report). This research report is second presentation of the findings investigating the opposition between instrumental and ontological types of learning in the participants' perception of their past learning experiences. In our first report we focused on cross-cultural comparisons. Analyzing similarities and differences between American and Brazilian participants in our study, Baker (Eilif, the second author) concluded that, "American and Brazilian cultures with their distinct perception and use of time were not as distinct when it came to shorten learning experiences. Although we found some variation between the two cultures, they were not as sharp as the difference in their perception and use of time" (Eilif 2004, p. 85). Brazilians used the words "stress" and "anxiety" in relationship with their jobs more often than did Americans, which might be caused by the economic crisis in Brazil at the time of the study. "Right time" for learning was a coding pertaining exclusively to Brazilians. Brazilians seem less pragmatic and more superstitious than Americans. They used it as justification for not wanting to shorten learning experiences. They saw the "right time" as propitious time. In the current analysis, we did not focus on cultural differences.

Here we focus on extracting and analyzing qualitative patterns rather than on the quantitative distribution of these patterns among the populations that we studied. Our main research question was how diverse populations describe their lived experiences of their own learning with regard to instrumental and ontological learning. Even so, where possible we provided quantitative patterns as well for our findings. Also, in this study we did not investigate cultural, gender, age, and educational background among the research participants with regard to their phenomenology of learning. At the end of the article, we discuss institutional and economic implications of our research.

Research Design

In order to understand people's perceptions towards learning in depth, we conducted semi-structured interviews with 21 Americans, 21 Brazilians, and 17 Russians asking about their perspectives towards different types of learning experiences in and out of school. All interviews were conducted in participants' native languages so that they could accurately express their experiences and beliefs. All interviews were video-recorded or audio-recorded, transcribed, and later translated into English from Russian and Portuguese. It is important to note that participants for this study were not randomly selected; they were drawn from a pool of friends, family, colleagues, and other acquaints. However, we tried to ensure the sample included variations in gender, ages, occupations and educational levels.

We conducted a 20- to 30-min semi-structured face-to-face interview with each of the participants in 2001–2003. During the interview, participants were asked to describe their various learning experiences. We particularly asked them to talk about learning “lived experiences” (Moustakas 1994), which happened as an event in their lives, as a skill or a hobby, and as a part of the schooling. All of those questions were followed by asking if they would like to shorten the learning process. At the end of the interview, participants were provided with an option to take a magic pill that would help them acquire the same skills or knowledge immediately. For participants who indicated that they would like to either shorten all events described earlier in the interview, we asked about the learning that they would not shorten. In addition to the questions discussed above, we also asked participants to predict the purpose of our research.

Our constructivist methodology was based on phenomenological research approaches focusing on studying people’s lived experiences involving their learning. “The basic purpose of phenomenology is to reduce individual experiences with a phenomenon to a description of the universal essence (a ‘grasp of the very nature of the thing,’ van Manen 1990, p. 177)” (Creswell 2007, p. 58). However, we disagree that the abstracted patterns of individual experiences have to represent “the universal essence” or “things out there,” which seems to us rather positivistic and at odds with philosophical spirit of phenomenology. Rather, we see these abstracted patterns as socially, culturally, and personally constructed. We followed the main procedures of phenomenological study described in the literature (Moustakas 1994).

Our analytical approach was inspired by Grounded Theory (Glaser and Strauss 1967). The interview transcripts were coded, based on emergent themes and categories such as challenging experiences, survival and recovery, right time, fun, boring, social relations, sense of accomplishment, intrinsic, useful-instrumental, and so on. For the first pass of data analysis, we read all transcripts, generated a list of potential codes unpacking ontological and instrumental learning (such as intrinsic and useful-instrumental) – the concepts that we constructed prior to the empirical research but then were transformed through this unpacking. We also formulated emerging hypotheses about the nature of these concepts. The rest of the data analysis took the form of constant comparative analysis whereby themes were identified and coded as they surfaced. As new themes emerged, these were compared with the previous ones and regrouped with similar themes. The analytical process was iterative and data analysis involved a number of readings of transcripts and progressive refining of emerging categories.

Findings

Do all the participants want to take MLP for some learning experiences? Do all the participants do not want to take MLP for some other learning experiences?

We have 57 research participants out of 58 total (98.3%) who would take MLP to shorten some of their learning experiences. Only one research participant (1.7%) noted that she could not think of any example for which a MLP would be taken. We have 54 research participants out of 58 total (93.1%) who would NOT take MLP to truncate some of their learning experiences. However, there were four participants (6.9%), who

reported that they would take MLP for all of their learning experiences— meaning they would shorten all their learning experiences.

We can conclude that a vast majority (53 people out of 58, 91.4%) of our participants have learning experiences for which they desire MLP and many others for which they do not desire to take MLP. Below we unpack these findings.

What Constitutes Instrumental Learning? Unpacking Instrumental Learning

We have conceptualized *instrumental learning* as *learning experiences that the learners consider as not having intrinsic self-worth but help to accomplish the final products desired by the learners — meaning that participants are only or mostly interested in its results*. We coded 123 instances of such instrumental learning in all learning experiences reported by 57 research participants.

What were the major themes in the participants' accounts of their instrumental learning justifying the lack of intrinsic self-value for them? We abstracted the following big themes:

1. **Inside benefits of intensification of instrumental learning (i.e., benefits within the learning process itself):** *Reduction of psychological, financial, and social burdens: pains of mistake making frustration, boredom and lack of meaning, technical descript skills and knowledge that do not need creativity and so on.*

- “[Shorten?] Oh yes, then you would not make as many mistakes, it takes a long time to learn that and you make a bunch of mistakes. [However,] if you already know it without going through the experience, it’s a lot nicer because it’s perfect and you do not make all the mistakes from the beginning” (Catherine, US, teenager).
- [Would you like to shorten it?] Yes, definitely. [Why?] It’s boring, year after year it’s the same thing, every year all over again” (Alma, US, young adult, HS diploma +).
- “[if I took MLP then] I could... know [only] technical information [about photography and not craft] (Anne, US, young adult, HS diploma +).

2. **Outside benefits of intensification of instrumental learning (i.e., benefits outside of the learning process):** *Opening possibilities to do more important things, with which instrumental learning is competing; making head start in life; engaging even more in instrumental learning as society changes; gaining advantage over others; improving the practice:*

- “[Take MLP?] Yes, heck yes, I did not enjoy high school. It maybe because I sort was involved with someone at the time and it was much more fun to be with her than at school” (Kathy, US, adult, BS).
- “Because [learning through doing mistakes] took so much time, I think I wasted a lot of time. If it took me a month to finish one work, why not in 15 days? Because with the other 15 days left, I could be learning something else, maybe to paint or to sew. I think it shouldn’t have to take so much time... [it] would be nice to shorten the time of learning so I would make sure to learn and

do everything I can” (Dalva, Brazil, mature adult).

- “I’m not interested in shortened time. But for my son, if I could, boom, and teach it to him. [Why?] Because that is his main problem in school. He doesn’t prepare for what might be important tomorrow. Maybe today it doesn’t seem important and he leaves it alone, but tomorrow there is too much that needs to be learned and understood for one day.” (Anna, Russia, adult, BS).
- “[Shorten?] Ah, it would have been great, I would be a very famous soccer player today, better than many out there” (Carlos, Brazil, adult)
- “[Why would you want to shorten time of learning how to tell good stories to your daughters?] Because I think this way they would benefit from better stories....” (Kayo, US, adult).
- “Just because if I can write amazing papers now, given the fact that I am still relatively young 20 years from now would really be at the top of my game, so to speak. And people would be ‘Wow! She can write so amazingly’ that would be fun...” (Helen, US, adult, BS).

3. Value of knowledge and practice’s expertise over learning,

- “[Take MLP?] Yes, because it is a learning that is not really important to me, like washing all the dishes when one was dirty is not important to me I wouldn’t want to go through that again. The activity of learning it is not as important as the ability of doing it now. The knowledge is more important than the process, what took to get to this point is not important... I would it is almost like winning the lotto that is what this question feels like to me. Yes, I would. If I knew how to write really, really good papers, so I could build on that and write phenomenal papers. So, if I do it really well I could build up on that and be really amazing. That would be fun, so fun!!! (laughing)” (Helen, US, adult, BS).
- “[Take MLP?] Yes, I guess because I would be enjoying the product sooner...” (Laura, US, adult).⁴

Instrumental learning emerges as involving clearly defined curricular endpoints that can be preset in advance. Although it may take diverse and unexpected ways to achieve these preset curricular endpoints, the process of their achievement does not have much value for the learner. The preset curricular endpoints have the highest value. The process of achieving the present curricular endpoints is desired to be shortened (and even eliminated as in Asimov’s story) to reduce internal burdens and gain more external opportunities that this intensification of learning provides.

What Constitutes Ontological Learning?: Unpacking Ontological Learning

We have conceptualized *ontological learning* as *learning experiences that the learners consider as having intrinsic self-worth for them in addition to (or even regardless of) the final products of this learning*. We coded 125 instances of ontological learning in all learning experiences reported by 53 of the 58 research participants.

⁴ When the education information is missing, the research participant chose not to provide the current level of education (mostly in Brazil).

What were the themes in the participants' accounts of their ontological learning? We identified the following themes:

1. **Emotional need:** *Enthusiasm, love, liking, joy, fun, pleasure, intrinsic value, pleasant challenge,*
 - “[Take MLP?]”⁵ No, Because is something that I enjoy, I love doing it” (Alma, US, young adult, HS diploma +).
 - “[Take MLP?] ...in this experience definitely no, because it was a blast to go through the learning process and experience all these things that I had not thought of it before and going backpacking and camping and all that stuff was great experience my parents are not that type and they never took us camping. The experience is more important than the results” (Bob, US, adult).

2. **Relational need:** *Learning = relationship with other people,*
 - “[Take MLP?] No, because my relationship with them can't be shorten, Why? Honestly, Cheryl has been an excellent role model and took us a long time to develop our relationship and she is a good person to be around and I don't want to shorten that, [even if the learn could happen faster?]It is the relationship that is important, it's not the time” (Jane, US, adult, MS).

3. **Intellectual need:** *Interest; learning as critical reflection on one's behavior, life and deeds,*
 - “[Why wouldn't you want to take MLP?] It [computer programming] will immediately stop being interesting” (Anna, Russia, adult, BS).
 - “[Take MPL?] No, because the process is important. I would want to try it, definitely, to see what it is like... but on the other hand I feel like I would be losing something, because the actual learning of something is interesting... Well the gradual interaction with some material, when you think about it every day, and start to view it differently. Immediately, now you don't know it, now you don't, you go through these stages and understand it completely differently, like something else. And moreover, when you're immediately there, you don't have the feeling that the material is something social, with that you lose some of the color, even some of the lines. Do you understand? So, when initially English was something foreign to me, it's important, because now I hear it through someone else's ear, as well as with my own. Maybe with mine not as well, as the carriers, but on the other hand, a lot better with that of the other. It becomes kind of like a stereo effect” (Sasha, Russia, adult, BS).
 - “I'm also going to have to think about this later. That education also consisted of... he didn't specially sit down and teach me, but my own understanding of everything, is made up of several phases, each of which can't be negated. And these phases, they all consist of... for instance, at first these are mountains, I'm in the mountains. And everything I do there is wrong, I don't behave myself

⁵ In the brackets, there are abbreviated questions by an interviewer.

correctly, I'm not psychologically constructed in a proper way, but I don't understand that yet, and in reality to understand that, if I had understood that earlier, I would have done everything more adequately, but I would have lost a lot from that, I wouldn't have learned, I need to learn from my own incorrect behavior. Then when I came back here, and he tells me that you did everything wrong, you need to do it like that, and I unexpectedly understood everything, and I understood, that now I would do everything absolutely differently, that understanding is valuable, and that understanding is only possible from that fact, that I behaved completely incorrectly” (Victor, Russia, adult, BS diploma).

- “[Alma talked about how her terrible injury of falling from a horse transformed her life and her as a person and that is why she does not want to shorten this important but painful learning experience]” (Alma, US, young adult, high school diploma +).

4. **Existential need:** *Learning = Life and life journey, shortening learning = shortening life; fullness of life, personal growth, life-long learning, experiences as essence of life and learning; learning = biography, becoming, and identity, nostalgia, right moments of life,*

- “[Why wouldn’t you want to take MLP?] Well... let's say... hahaha. The thing with my close friend, I wouldn't want to shorten that. That means that... it means to push out of life all the adventures that I did, being in the mountains. It means to amputate part of my life, and what would I get in return? Those results that I achieved, let's have them earlier, but I would lose that whole part of my life” (Victor, Russia, adult, HS diploma).
- “[Take MLP?] No, it just doesn't go with my whole philosophy in life, which is the fact that it is not about the destination but about the path. To have this happen and it is not under my power or control to know exactly what it is the experience of learning is what it is all about not the end result of being this way... you don't know what the destination really is” (Janna, US, young adult, BS).
- “No, it was another growth thing and I had fun learning it I enjoyed every stage of the process and I wouldn't want to take it away from myself, even if now I look at some of the things in the early stage and say “gosh it is not very good” it was part of the growing up and is part of who I am” (Mary, US, adult).
- “...because my attitude still changing about it, it is not like I stopped learning from my experience and it is not like I learned something and that was the end of it” (Bob, US, adult).
- “[Take MLP?] No, this one I would not because it was part of my childhood. I had such a happy and healthy childhood, everything was so good and perfect. I would not want to change anything, much the opposite if I could I would prolong it. The place where I was born was beautiful and my family was very united” (Jorge, Brazil, mature adult).
- “[Take MLP?] No, because I think that everything that I learned and am learning has being at the right moment, I think if I shortened this experience I could lose something in the process. I think I'm learning everything in its

right time. Even though at the beginning I was totally anxious to learn more about it, and I was always on the internet researching it, still I do not want to shorten it” (Augusto, Brazil, young adult, BS).

- “No, I think that experience was good and it was good to go through all the steps all the little steps since we met it took a week for him to call me and then 4 or 5 days to meet the first time and the first kiss and where we went and all the stuff, I would not like to shorten it because I like the memories” (Maira, Brazil, adult).

5. **Quality of experiences:** *Craft of a practice; serendipity; taking out mistakes, dead-ends, and roundabout of experiences reduces the quality of learning,*

- “[Take MLP?] I do not think so because [otherwise if I took MLP then] I could know nothing in high school and pick up a class and know all this technical information but I would not have a natural progression because photography gives you this progression I would have the same results but not the sense of accomplishment because I would not be able to see the progress of it” (Anne, US, young adult, HS diploma +).
- “No, I would still want to go through the experience because the MLP wouldn’t allow me to bond with my grandmother the ways that I did the MLP would not install in me the values that she did every day of my life it would not necessarily show me all the miracles that my grandmother embodied in me; what she did was an act of hope and an act of love and I can’t see how a little pill would be able to do it” (Juliana, Brazil, adult).
- “You have to understand that you can’t, if you are immediately able to do everything really well, then you don’t know what is bad, and then you can’t evaluate that this is really in fact good and is the maximum that you can get. So that you would still be left with some kind of... you would still have thoughts... you aren’t sure that you’ve achieved the absolute. So that it’s still, you don’t know the bad, you always look for the good when you know the different sides of a situation. If you fall into a better side, a perfect side, how do you know it’s perfect if you have nothing to compare it to? You know, I take a medicine and I would be well able, and that would probably be good, but then I wouldn’t be able to answer your question, because I would only know that one way, and no other” (Olga, Russia, adult, PhD).

Ontological learning constitutes life moments for the participants that address their emotional, relational, intellectual, and existential needs. It involves transformative moments for the participants. In contrast to instrumental learning, people do not remain equal to themselves through this learning but become somebody else (Lave 1992, April). Ontological learning is eventful, unpredictable, and authorial. In ontological learning, meaning is not consumed and extinguished in this consumption, like in instrumental learning (Arendt 1958), but rather it creates the flavor and quality of life (i.e., even “meaning of the life”). Finally, ontological and instrumental learning can overlap with and penetrate into each other. For example, critical thinking can be a part of instrumental or ontological learning depending on the value the participant places on the experience or outcome of the learning.

Does the Description of the Participants' Learning Experiences Predict their Attitude to It? Or Is Participants' Attitude to Learning Rooted in their Authorial Evaluative Judgment of their Own Learning Experience?

To see if the description of participants' learning experiences alone predicts the participants' judgment to shorten their learning (i.e., take or not take the Magic Learning Pill), we used a statistical technique that otherwise is applied for calculating and assessing intercoder reliability. Thus, we treated a research participant, judging his or her learning experience to shorten or not to shorten, as Coder#1. The Coder#2 was our coder, trained in coding instrumental and ontological learning, who had access only to the participants' descriptions of their experiences but not to their judgments. Training was done on about 1/3 of the data until our coder had reached acceptable intercoder reliability with another coder. After the training, our coder coded 66 descriptions of the randomly selected 21 participants' learning experiences.

If there is acceptable intercoder reliability between Coder#1 (the research participants) and Coder#2 (our coder), it means that the research participants' judgments about whether or not their learning experiences should be shortened can be deduced from the nature of the learning experiences, which would warrant additional content analysis. However, if there is the absence of acceptable intercoder reliability, it would suggest that the research participants' authorial judgment may define the nature of their learning experiences (i.e., instrumental or ontological) rather than the content of these learning experiences alone.

We combined our coder's coding (Coder#2) and the participants' judgments (Coder#1) of their own experiences together for the assessment of their intercoder reliability. There was 47% agreement ($N = 66$), Cohen's Kappa = 0.131, $p < .05$, which is VERY low. Low Cohen's Kappa (< 0.60) suggests a lack of intercoder reliability between our coder (Coder#2) and the selected 21 research participants (Coder#1). Based on descriptions of the participants' learning experiences and our definitions of instrumental and ontological learning, the coder could not accurately predict whether the participants would shorten or not shorten their learning. We therefore conclude that participants' attitude to learning is not grounded in the nature of experiences but in the participants' own authorial evaluative judgment of them.

We can imagine four alternative possibilities challenging our conclusion:

- 1) the concepts of the types of learning — instrumental vs. ontological — are capriciously subjective and unreliable,
- 2) the types of learning are not capriciously subjective but our coder was insufficiently trained despite all our efforts,
- 3) the selected participants themselves were not good coders of their own learning experiences, and
- 4) the participants' descriptions of their learning experiences (all or some) were thin enough to prevent our coder from reaching a sound judgment. However, we selected rather long descriptions for our intercoder test.

To some degree, #1 and #3 possibilities are still aligned with our conclusion, because at the end of the day, only the research participants' subjective judgments

matter and not some kind of “*objective* concepts of type of learning.” The #2 and #4 possibilities challenge the quality of our research. Further investigation of these possibilities is needed.

Does Taking MLP Correlate with a Type of Learning?

We have found a strong correlation between a research participant’s decision of (not) taking MLP (shortening learning) and type of learning as we coded it. On the first glance, it seems rather circular to check for this correlation. Since we operationalized instrumental learning as one for which experience of learning itself is not important – only outcome is important while ontological learning was operationalized in reverse, is not the strong, if not perfect, correlation between instrumental learning and shortening learning is given?! Similarly, is not the perfect correlation between ontological learning and not shortening learning also given?! Our “iron reason” was undermined by one of our colleagues when we presented our preliminary findings that had not included this analysis at that time. She told us that she would shorten her dramatic and very eventful dating experiences, being very ontological but also highly traumatic for her. Thus, we decided to check for the correlations and investigate possibilities for non-correlation – cases that went against our “iron logic” and reasonableness.

We have 245 total instances involving both description of some learning experience and a research participant judgment on whether to shorten (i.e., take MLP) or not shorten the learning experience (i.e., not to take MLP). Of the 245 total instances, we have 3 instances, in which 3 research participants saw both diverse aspects (to both shorten and not shorten in some of aspects of these learning experiences) and we coded that point of view as both instrumental and ontological (we excluded them from the table) (Table 1).

The Pearson’s correlation between taking MLP and the Instrumental type of learning is very high: 0.942, $p < .01$; correlation between NOT taking MLP and the Ontological type of learning is similarly very high: 0.942, $p < .01$. Both high positive correlations are statistically significant. Pearson’s chi-square test supports the finding: 214.825, $df = 1$, $N = 242$, $p < .0001$ (one-tailed Fisher’s: $p < .0001$).

Although we found a strong correlation, as we expected, we also found puzzling deviations from it, analysis of which we are presenting below. It seems that even when something feels very logical and makes perfect sense, it can be wrong. Not everything that is reasonable is true. At the same time, we confirmed our expectations although not perfectly, which is also an important finding because as we know now it was not guaranteed.

Table 1 The relationship between shortening learning and type of learning

		Types of learning	
		Instrumental	Ontological
Take MLP	Yes	117 (47.8%)	4 (1.6%)
	No	3 (1.2%)	118 (48.2%)

Does Taking MLP always Equal Instrumental Learning? Can Taking MLP be a Part of Ontological Learning?

No, we could not find any unambivalent case that was coded as taken MLP (or desired to shorten learning experience) AND as ontological learning. However, we found 7 research participants (12.1%) who expressed ambivalence about their ontological learning that they both might and might not be shorten. We grouped these patterns of ambivalence in the following ways:

Pain and Frustration of Ontological Learning Experience

Some of ontological learning experiences that were valued by a person might also have some painful, annoying, and frustrating aspects that the person wanted to shorten or even eliminate. In the following example, a research participant was ambivalent about her painful but valuable ontological learning experience, and she would have been tempted to cut it due to pain:

Of having missed one year at school and I had to repeat the whole grade, my life changed because my mother wanted to change me to a different school, a more difficult school and because of this my grades fell and I was separated from my girlfriends, it was a big and drastic change in my life... [So, what did you learn from it?] I started studying again and also gained some maturity during this time and saw that my parents were investing a lot of money and emotional energy in me, especially when I got home all bummed out because of another low grade... basically I started valuing more what I had and what my parents were giving me.

Shorten this learning experience?

No, I don't think for this situation I would, at least not now... but if you had offered me at that moment I'd accept [MLP] with no hesitation because it's very painful at the moment when you're going through the change. But today that I have already gone through the whole deal I look back and think it was totally worth it ...

Why?

I think that on the long run [in this situation] there was not the type of difficulty where I suffered so much that I wouldn't want to go through the good parts (Flavia, Brazil, young adult, high school diploma).

Another research participant explicitly told us that whether she would take MLP or not depends on the balance between pain and ontological self-worth of the learning experience, "If the frustration was more than the pleasure I would not keep doing that it [i.e., the statement of not taking MLP]. But there will always be a frustration when I am learning something new" (Laura, US, adult, PhD).

Other People and Self can be Benefited from earlier Learning

A research participant was ambivalent about his ontological self-worth learning experience because shortening learning may benefit his children:

I really like telling stories. I learned, I do not remember exactly, maybe 4th and 5th grade, a not very creative assignment, but was a challenge and I liked to write and read stories and try to be creative and funny. Now, I do it for almost every night on an on-going story for 4 years with my daughters, and a series stories called the “Dorothy” story, continuation of Wizard of Oz. Caren and her sisters end-up in the stories.

Shorten this learning experience?

It’s funny because I never had the goal to become a good storyteller... if you could become good quickly at it? Sure, I mean yes, if you can say I will learn it instantly sure...

Why?

Because I think this way they would benefit from better stories, but it is hard to imagine it because the whole process of “becoming” a better story teller has been a responsive way listening to what they wanted and it is hard to imagine it happening instantly and it is being a kind of discovery together you know... No, maybe I will take it back, it is the learning of this story telling that is being the fun part you know, and what is keeping me going in somewhat the challenge of it the idea that it is not just the improvement but the idea that I am better that I was it is my own attachment to the process would be gone if I instantly parent that I was good as I ever get (Kayo, US, adult, BS).

Another participant similarly considered shortening the learning process that would make herself benefit earlier but then she rejected MLP due to ontological self-worth of her learning experiences.

Mechanics Versus Craft of Learning Experience

Finally, one research participant would shorten a mechanical part of his learning experience while preserving the craft part of it:

Taking pictures, and I would say that I have a lot more things to learn but people like my picture. I learned just by going out on my own, but I have never taking a formal class. My wife has helped me because she has taking a couple of classes. I have taken a ... class and know how to make a good composition. You can learn how to make composition but that does not mean that you will take good pictures. I am continuing learning; I got my first camera 5 years ago. I could have learnt much quicker if I had taken classes.

Shorten this learning experience?

Technically, yes, would be nice to know what is the right aperture or shutter speed to take pictures but... on the composition side I don’t think that is a good bet could take just a magic pill I guess you could but goes back to a personal thing, everyone could take a picture of the same tree and the picture would be different because it is such an individual thing.

Why would you take a Magic Learning Pill for the technical part and not for the composition part?

because... when it comes to photography I’m not interested in the technical part as I’m interested in the compositional part, I don’t think it is something that you

learned and it's just a matter of doing it over and over again. If you take a whole role of film, you never know how it's going to come up as far composition goes... even in ten years from now it may be the same (Zion, US, adult, BS).

The only connection we found between the type of subjective experience – ontological vs. instrumental – and the curriculum is about learning technical skills of practice (more instrumental) vs. the craft of the practice (more ontological). We did not find any connection between academic subjects (e.g., math vs. art) and the type of subjective experience.

Does NOT Taking MLP always Equal Ontological Learning?: Pride, Appreciation of Skill, or Social Status

We have come to only one type of instrumental learning which the participants did not want to shorten. Three research participants (5.2%) expressed this type of attitude (minus the three other participants who demonstrated all possibilities). Although in instrumental learning the product is the most important, nevertheless the learning process gives a person pride, appreciation of skill, and/or social status to go through it:

To be good in science [feels] pretty well — [to learn to] come out with a good research question and hypotheses and question things. I learned through lab classes and my advisor and some of my classes were pretty good.

Shorten this learning experience?

No, you take pride in doing it yourself if I could just do it immediately I probably wouldn't feel proud of (Mary, US, adult, MS).

Another participant talked about appreciation of the skill that would disappear with taking MLP: “I guess it would be great, it would be great to just start playing one day and play it well, but without the effort I don't know if you would appreciate as much you wouldn't have gone through the stages of the process to really appreciate that skill” (Nina, US, BS).

This teenager who moved from the US to Spain with his mom thought that MLP might take away his social capital:

Have you had learning experiences would not you want to shorten?

Sports, I really like learning how to play sports and having people teaching me. I like the idea that I learned it myself because it makes me feel good; it makes me feel that I am really good at that, because I learned it myself.

Why sports and not math or language?

Because sports in Spain is very popular and kids that are very good at that get a lot of respect and usually get always picked by the teams and things and if I took the pill people it would be all too easy and would not have any merit in it.

But why would you not take the pill for other things?

Well, because those things language and things are not really what I really like and if I took the pill it would be a lot easier and I would not have to worry about it.

Challenging Feasibility

As part of the imaginary experiment that we offered to our research participants, we explored their focus on desirability of the Magic Learning Pill over its feasibility. However, this hypothetical premise was either difficult for some of the participants or was rejected by some others (32, 55.2%).

Let me ask you. Your learning physics took you a certain amount of time. Would you want to shorten this period of time, if the results were the same? The learning of physics.

I don't completely understand the question.

Well, to learn to do what you do, you learned physics. Would you want to shorten the period it took you to learn it, if the result were the same?

No, this is simply a process, I do it in order that I may be learning something. And so that I may have a possibility of continuing this matter, I have performed certain formalities, taken tests, written scholarly works. But the primary thing is not to take tests, and to write scholarly works, but to learn something. To understand something that isn't understandable. It takes time and can't be shorten (Vlad, Russia, mature adult, PhD).

Here is another rather detailed answer rejecting the feasibility of MLP:

Would you want to shorten the period of education if the result were the same?

Like they say wanting isn't harmful, but I doubt that it was possible because in any case, without attempts I wouldn't have been able to gain the necessary experience. Of course in life I could have cut short the time spent on doing things that turned out unnecessary, but those things that turned out unnecessary turned out so after the fact. At the time when you are undertaking these things, you don't consider them unnecessary.

But what if in America they invented a pill that you could take that would make you write books and articles well, would you take it?

That's the same as saying if I had a magic wand...

I understand that. I'm not interested in the possibility of that, but in its desirability. Let me rephrase it. Is it worth someone, let's say me, working on something that would shorten the period of learning?

To shorten the period of time that's exactly right, but...

Why not?

Well, that's because, at least in my area that might not be the decisive solution to the question, because for there to be something to say, you need to go through a certain path. For instance with writers who write fiction, first Chekhov [a very famous Russian writer of the past] had to work as a doctor and then he got to know people well enough that he...it's hard to say was that absolutely necessary or not. There are some people, like Lermontov [another famous Russian writer and poet of the past], who wasn't a doctor, but became a writer immediately, but he wrote a bit differently, yes? Not like Chekhov, so quality-wise it's a very difficult question. I don't think that some kind of algorithm is possible here. So

that learning the basics, teaching a person how to write without mistakes, to teach a person how to use the proper jargon, as a novice of course it is possible to shorten that process, like with anything, but to put into a person's head that which he will communicate to the world, and for which writing is a tool, I don't know how to shorten that. For each person it is...

But again, is that desirable? My question isn't about the feasibility but the desirability.

Well, anything is probably desirable that allows you to achieve more in your life. It's probably all desirable.

But you don't think it's possible, do you?

I am skeptical in this. I would like to underline that methodology is something that... there is probably a way to quicken teaching methodology. But what concerns the substance, that is probably very individual. The process of growth and individuality, to the moment when she has something to say (Igor, Russia, adult, BS).

Here, other participants viewed learning as a holistic intertwining of all the experiences forming the learning and not as the acquisition of discrete self-contained skills and knowledge: "I can't separate that question from the question of possibility. The thing is that, throughout this entire world, we have to pay, maybe that is a bad word, to pay... but you can't get happiness, you can't even... when I... when I... I only saw the beauty of the mountains when I first suffered all the horrors of the climb, the physical pressure. If none of that existed, if I didn't go through it, then I could never see them that way. A person needs to pay with pain and suffering to get joy... those are the conditions of our connection to the world, that's the damned price... for our adventures, for everything" (Victor, Russia, adult, HS diploma).

We suspect that this reluctance to accept the feasibility of the Magic Learning Pill may indicate some of the participants' perception of learning as essentially ontological and, thus, impossible to shorten.

Discussion: Ontological Pedagogy

The main finding of our research suggests that both instrumental and ontological types of learning are recognized by a wide range of people as present in their lives and valued. This is especially significant in light of the overwhelmingly instrumental tone of public discourse about education. In the context of school, ontological learning was mentioned 35 times (28.0%) while instrumental learning was mentioned 74 times (60.2%) (the rest of the cases were too ambivalent to code). Although ontological learning was often mentioned as taking place outside of school, pedagogy supporting ontological learning at school deserves consideration. Based on our findings about reported themes about ontological learning, we have developed the following incomplete principles of ontological pedagogy aiming at promoting and supporting ontological learning:

1. Focus on the process of learning and not so much (or not only) on learning outcomes, preset curricular endpoints;

2. Learning focusing on students' here-and-now experiences, emerging demands and interests;
3. Learning viewed as transcending any space, time, and people;
4. Self-initiated learning;
5. Authorial personal transformative, becoming, learning embedded in social relations;
6. A safe learning environment, in which students are not punished for their mistakes (no summative assessments, e.g., grading and credentials);
7. No forced learning;
8. Exposure to diverse and rich learning experiences;
9. Support of students' agency and voice; and
10. Students as the final authority for their own learning and for defining their own learning (and education).

Matusov et al. (2012) discussed ontological and non-ontological (instrumental) approaches and designs of “community of learners” and have come up with similar characteristics of an ontological community of learners. As one of our participants summarized this ontological pedagogy, “A lot of what influenced me sometimes had nothing do to with what the teacher set-up to do; a lot for me are the marginal experiences that contribute to learning. It is all about the experience and not having a goal or destination. It is all about other factors and your senses and texture and that is not something that I would like to experience in a [Magic Learning] pill.”

A reviewer, Alexander Poddiakov, raised a very interesting point: sometimes forced learning and unsafe learning environments where students are punished for their mistakes may lead to ontological learning,

One can imagine a complex situation of teaching (e.g., play a musical instrument, classical ballet, etc.) by a [very] sophisticated person who is excellent in his or her ability to develop a student as a musical performer (a ballet dancer, etc.), but uses punishment for mistakes, from to time [to time] forces learning and do other unpleasant and even ethically doubtful things. Such traditions of teaching were popular still 50 or 100 hundred years ago—not so long ago from historical point of view. In spite of the fact that the growing teenager, an ex-student and an ingenious performer now, thinks some situations of teaching by that person absolutely terrible, humiliating and traumatic, and thinks that s/he will never use such methods towards his or her own students, s/he can reject from the Magic Learning Pill, because the teacher was ingenious in some other aspects, was really very helpful and understanding in crucial situations. It is a matter of personal choice how to estimate such, very ambivalent in many aspects, former interaction.

In our view, in those examples, ontological learning might happen due to or *despite* forced learning and unsafe learning environment. A simple correlation is not enough. In the reviewer's examples, it seems that ontological learning happened as a part of the participants' appreciation of “terrible, humiliating and traumatic” treatments of the student by the teacher. We do not know that. The final mastery of the practice should be separated from the subjective experience and its judgement of the participants. It is

true that there is a common sadomasochistic ideology in education where the teacher must induce pain for the student to learn well and the student must learn to appreciate and even enjoy it (e.g., “No pain, no gain”) (Matusov and Sullivan 2017, in preparation). Yes, we can envision when forced learning and/or unsafe learning environments can provide exposure of a student to some important learning experience that can promote ontological learning. But even in this case, the main question, requiring more investigation, remains: is ontological learning due to or despite forced learning and/or unsafe learning environments? It is unclear if such a participant would like to take a Magic Learning Pill to eliminate “terrible, humiliating and traumatic” treatments or not.

Our research findings suggest that the practice of education should assert its own internal sphere beyond instrumentality, serving other spheres of human life. Education is needed not just because it can help the economy, upward social mobility, and/or participation in democratic society (Labaree 1997) but because it is a part of the good life itself. Without education as an on-going never-ending process, life is incomplete (Greenberg 1992). This type of non-instrumental education has its cause in itself and involves self-actualization (Maslow 1943).

The original term “school” (σχολεῖο) means “leisure” (σχολή) in Greek (Arendt 1958). Our modern society is need- and necessity-based: many of our daily activities are justified by our needs and necessities and not “leisure” in the Ancient Greek sense of this term. For Ancient Greeks, leisure was not just the absence of labor, or rest, or idleness, or entertainment, or vacation – but rather self-fulfillment and self-actualization of one’s own authorial agency. Still, our research shows that even in need- and necessity-based societies like ours, education as self-actualization of authorial agency breaks through instrumentality like blades of grass shoot through pathway asphalt. Ancient Greek leisurely society that gave birth to education as self-actualization was based on slavery. With the recent emergence of smart technology, a new possibility for a leisurely society may emerge. We suspect that with a transformation of our global society from the Age of Standardization, Measurement, and Accountability to the Age of Authorial Agency — process that has been only recently started (Kaku 2011; Mitra 2013; Pink 2005; Zhao 2009), — we will witness a transition from a premium on instrumental learning to a greater appreciation of ontological learning and education.

References

- Arendt, H. (1958). *The human condition*. Chicago: University of Chicago Press.
- Asimov, I. (1959). Profession. In I. Asimov (Ed.), *Nine tomorrows: Tales of the near future* (1st ed., pp. 17–74). Garden City: Doubleday.
- Bennett, W. J., Finn, C. E., & Cribb, J. T. E. (1999). *The educated child: a parent's guide from preschool through eighth grade*. New York: Free Press.
- Creswell, J. W. (2007). *Qualitative inquiry & research design: choosing among five approaches* (2nd ed.). Thousand Oaks, CA: Sage Publications.
- Dewey, J. (1997). *Democracy and education: an introduction to the philosophy of education*. New York: Free Press.
- Eilif, D. (2004). *Magic learning pill: The desire for speed and its effects on education. Bachelor of arts in educational studies with distinction*. Newark: University of Delaware.
- Freire, P. (1998). *Pedagogy of freedom: ethics, democracy, and civic courage*. Lanham: Rowman & Littlefield Publishers.

- Glaser, B. G., & Strauss, A. L. (1967). *The discovery of grounded theory: strategies for qualitative research*. Chicago: Aldine Publishing Co.
- Gorz, A. (1989). *Critique of economic reason*. London: Verso.
- Green, A., Preston, J., & Janmaat, J. G. (2006). *Education, equality and social cohesion*: Palgrave Macmillan Basingstoke.
- Greenberg, D. (1992). The birth of a new paradigm for education. Retrieved from http://www.sudval.com/05_underlyingideas.html#05.
- Hampel, L. R. (2018, forthcoming). *A history of shortcuts in American education*. Lanham, MD: Rowman and Littlefield.
- Kaku, M. (2011). *Physics of the future: how science will shape human destiny and our daily lives by the year 2100* (1st ed.). New York: Doubleday.
- Kumar, M. (2008). *Quantum: Einstein, Bohr and the great debate about the nature of reality*. Thriplow: Icon.
- Labaree, D. F. (1997). *How to succeed in school without really learning: the credentials race in American education*. New Haven: Yale University Press.
- Labaree, D. F. (2010). *Someone has to fail: the zero-sum game of public schooling*. Cambridge: Harvard University Press.
- Larkin, M. J. (2002). *Using scaffolded instruction to optimize learning*. ERIC clearinghouse on disabilities and gifted education Arlington, VA.
- Lave, J. (1992, April). *Learning as participation in communities of practice. Paper presented at the meeting of the American Educational Research Association*. Retrieved from <http://www.udel.edu/educ/whitson/897s05/files/Lave92.htm>.
- Maslow, A. H. (1943). A theory of human motivation. *Psychological Review*, 50, 370–396. doi:10.1037/h0054346.
- Matusov, E., Sullivan, P. (2017, in preparation). Pedagogical violence. *Dialogic Pedagogy: An International Online Journal*.
- Matusov, E., von Duyke, K., & Han, S. (2012). Community of Learners: ontological and non-ontological projects. *Outlines: Critical Social Studies*, 14(1), 41–72.
- Mitra, S. (2013). Build a school in the cloud. Retrieved from http://www.ted.com/talks/sugata_mitra_build_a_school_in_the_cloud.
- Moustakas, C. E. (1994). *Phenomenological research methods*. Thousand Oaks: Sage.
- Packer, M. J., & Goicoechea, J. (2000). Sociocultural and constructivist theories of learning: ontology, not just epistemology. *Educational Psychologist*, 35(4), 227–241.
- Pink, D. H. (2005). *A whole new mind: moving from the information age to the conceptual age*. New York: Riverhead Books.
- Ramey, C. T., & Ramey, S. L. (2004). Early learning and school readiness: can early intervention make a difference? *Merrill-Palmer Quarterly*, 50(4), 471–491.
- Rigby, C. S., Deci, E. L., Patrick, B. C., & Ryan, R. M. (1992). Beyond the intrinsic-extrinsic dichotomy: self-determination in motivation and learning. *Motivation and Emotion*, 16(3), 165–185.
- Ryan, R. M., & Deci, E. L. (1996). When paradigms clash: comments on Cameron and Pierce's claim that rewards do not undermine intrinsic motivation. *Review of Educational Research*, 66(1), 33–38.
- Tadepalli, P., & Natarajan, B. K. (1996). A formal framework for speedup learning from problems and solutions. *Journal of Artificial Intelligence Research*, 4, 445–475.
- van Manen, M. (1990). *Researching lived experience: human science for an action sensitive pedagogy*. Albany: State University of New York Press.
- Zhao, Y. (2009). *Catching up or leading the way: American education in the age of globalization*. Alexandria: ASCD.

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____ Matusov, E. (2009). *Journey into dialogic pedagogy*. Hauppauge, NY: Nova Science Publishers.

____ Matusov, E. (2011). Authorial teaching and learning. In E. J. White & M. Peters (Eds.), *Bakhtinian pedagogy: Opportunities and challenges for research, policy and practice in education across the globe* (pp. 21–46). New York: Peter Lang Publishers.

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