Towards the Development of a Volitional Design Model

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Abstract

Current theories and models on self-regulated learning (SRL) emphasize the importance of sustained motivation in the face of distractions or obstacles for successful goal-oriented learning to take place. However, there is a significant lack of theories and models with regard to dealing with issues such as decreased motivation. As two decades of research on modern conceptions of volition have convincingly shown, volitional strategies that are targeted on supporting the learner in the face of distractions can make a significant difference. Although there are some validated models regarding the systematic design of motivational sound learning environments available, none of them are focussing on volitional aspects. Hence, this paper introduces the development and empirical examination of a volitional design model.

Summery

Motivation is commonly defined as something that energizes and directs behaviour. Even though some authors subscribe categories such as effort and persistence also to the construct of motivation (e.g. Maehr, 1984), recent research endeavours have demonstrated that this is not an accurate description (Pintrich, 1999). Therefore, and in order to get a better understanding of the actual psychological mechanisms, a distinct category has been re-introduced: Volition, which can be defined as “the ability to maintain and enact an action

tendency the organism is committed to despite the impulsive nature of competing action tendencies" (Kuhl & Kraska, 1989, p.344). There are several volitional tools that help shielding distractions, for example Kuhl's (1984) six action control strategies (selective attention, emotion control, environmental control, parsimonious information processing, encoding control, and motivation control). It is assumed that as soon as the current intention gets endangered by competeting intentions, one or more of these control strategies step in. These modern conceptions of volition have stimulated numerous studies and have provided unique explanations of human behaviour. For instance, in a study by Garcia, McCann, Turner and Roska (1998), it could be shown that positive effects of intrinsic goal orientation and self-efficacy on cognitive engagement were facilitated by volitional control.

From an educational perspective, questions that are pertaining to a systematic utilization of volitional concepts to the context of learning become crucial. In other words: How can one "translate" motivational and volitional principles into guidelines for designing learning environments? In general, the "language" of guidelines or advises is instructional design, which is conceived of as a "linking science" (Reigeluth, 1983, p.5) and defined as "a body of knowledge that prescribes instructional actions to optimize desired instructional outcomes, such as achievement and affect".

Although some motivational design models have been developed such as the ARCS model (Keller, 1983) and although volition has gained more and more influence in current research, no volitional design model is available until this day.

A first step towards the development of a volitional design model is to scan volitional theories and concepts for key principles and translate them into an instructional design language. One of such a key principles is described in the work of Kuhl. He argues that "only if the actor perceives some difficulty of enactment will action-control processes be initiated" (Kuhl, 1984, p.124). Therefore, the volitional design model (VDM) postulates that volitional

support should not be delivered needlessly. Instead, it integrates as well validated motivational strategies to provide a balanced basis of support.

The VDM integrates traditional instructional systems design approaches (e.g. Dick & Carey, 1996) and current volitional theories into a comprehensive framework for designing volitional sound instruction. Basically, it holds four phases: (1) analysis, (2) design, (3) implementation, and (4) evaluation. It is important to note, that unlike some instructional systems design models, VDM postulates that the analysis phase is to be carried out first. The purpose is to obtain relevant data for determining the volitional competence of the learner. Based on this, one can move to the next phase which is about designing strategies to support learning activities. Since these strategies should not be considered without an actual learning context, the next step is to adapt the strategies to the learning environment. Procedures of formative and final evaluation are then to be conducted.

In a first exploratory study, some of the key features of the volitional design model were empirically examined. In this paper, only the effectiveness of the strategies will be dealt with.

These six volitional and motivational strategies were developed and distributed to the 90 participants by means of email messages. There were three conditions of the independent variable message type: bundled, distributed, and placebo. The latter was meant to control for possible novelty effects.

In the first set of analyses, there was one independent variable, message type, with three levels: bundled messages, distributed messages, and placebo. For the second set of analyses, there was one independent variable, study tip use, with two levels: opened study tips versus did not open study tips. Repeated measures analyses were conducted in both sets of analyses because pre- and post-measures were taken on each of the dependent variables consisting of study habits as measured by study time, three components motivational attitudes toward the course (interest, relevance, and confidence) as measured by the appropriate scales

in the Course Interest Survey (Keller & Subhiyah, 1993) and achievement as measured by test grades.

After the second test was given, which concluded the treatment period for this study, the students in the bundled and distributed groups were asked if they opened the study tips attachments to look at them. An unexpected result was that fewer than half of the participants did so. Therefore, the researchers decided to add an ad hoc independent variable which was study tip use with two levels consisting of those who looked at the study tips and those who did not. Since the means of the two groups were almost identical ($M_{bundled}$ = 1.68; $M_{distributed}$ = 1.67) with respect to how many opened the study tips (1 = yes; 2 = no) the distinction between bundled and distributed was not used in the analyses of this independent variable.

The first dependent variable was Study Time. Based on the self-reported data in the participant logbooks which were submitted by email, the study time prior to the first test was compared to the study times from the first to the second test. Participants reported time spent studying the text and time spent on a special project assigned to the class. These were summed to compute total study time.

The second dependent variable was measured by using the attention, relevance, and confidence subscales from the Course Interest Survey. The satisfaction scale was not used because it was not pertinent to this particular study. This CIS is a situation-specific survey which has satisfactory reliability estimates as measured by Crohbach's alpha formula ($r_{attention}$ = .84, $r_{relevance}$ = .84, $r_{confidence}$ = .81). Each of these subscales was used as a separate measure.

In the study tips usage groups, there were several significant differences between the participants who opened the study tips attachments and those who did not. First, with regard to study time, there was a significant interaction, F (1, 25) = .8.04, p=.009, such that those who opened the study times increased while those who did not open them decreased in time spend studying. There were no differences between the two groups in interest or relevance, but there was a difference in confidence. There was a significant interaction, F (1, 38) =3.43,

p=.072. Those who opened the study tips scored lower on the pre-measure than those who did not open them, but their confidence increased slightly on the post-measure while the scores of those who did not open the study tips decreased dramatically.

In summary, these results are to be interpreted carefully since this is a first attempt to evaluate the VDM. However, positive trends can be detected such as the increase in study times by those students who opened the strategies.

Further studies are in preparation which will be especially focusing on enhancing the perceived relevance of the study tips. Since there are numerous new technological improvements available which, however, are oftentimes are applied to educational settings without referring to a systematic approach, the VDM provides a heuristic framework to conduct evaluation studies.

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