

The added value of autobiographical reflexivity with persuasive technology for professional identities of Social Work students: a randomized controlled trial

Monique M.J. Engelbertink, Saskia M. Kelders, Kariene M. Woudt-Mittendorff & Gerben J. Westerhof

To cite this article: Monique M.J. Engelbertink, Saskia M. Kelders, Kariene M. Woudt-Mittendorff & Gerben J. Westerhof (2021): The added value of autobiographical reflexivity with persuasive technology for professional identities of Social Work students: a randomized controlled trial, Social Work Education, DOI: [10.1080/02615479.2021.1888910](https://doi.org/10.1080/02615479.2021.1888910)

To link to this article: <https://doi.org/10.1080/02615479.2021.1888910>



© 2021 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group.



Published online: 22 Feb 2021.



Submit your article to this journal [↗](#)



Article views: 63






View related articles [↗](#)



View Crossmark data [↗](#)

The added value of autobiographical reflexivity with persuasive technology for professional identities of Social Work students: a randomized controlled trial

Monique M.J. Engelbertink ^{ab}, Saskia M. Kelders ^{bc}, Kariene M. Woudt- Mittendorff^a and Gerben J. Westerhof ^b

^aResearch Centre Educational Innovation & Effectiveness, University of Applied Sciences Saxion, Deventer, The Netherlands; ^bCentre for eHealth and Wellbeing Research, University of Twente, Enschede, The Netherlands; ^cOptentia Research Focus Area, North West University, Vanderbijlpark, South Africa

ABSTRACT

The added value of autobiographical reflexivity and persuasive technology (PT) compared to critical reflection was examined in a blended learning course. The main outcome measure was achieving a professional identity (PI). A Randomized Control Trial (RCT) was carried out with three measurement points (baseline, post-course, follow-up) and had three conditions: critical reflection; critical reflection and autobiographical reflexivity; critical reflection and autobiographical reflexivity integrated with PT. The study examined effectiveness (questionnaires, reflection reports), evaluations (focus groups) and persuasiveness (questionnaires) amongst 187 Dutch Bachelor Social Work students. There were no significant interaction effects between time and condition, however participants in all conditions improved significantly over time in their PI, choice certainty, social well-being and were stable in learning motivation, career reflection, drop-out threat, reminiscence, internal locus of control, emotional well-being and psychological well-being. Analysis of the reflection level through reflection reports showed no differences (critical reflection versus critical reflection combined with autobiographical reflexivity). The autobiographical reflexivity conditions showed more affective and cognitive involvement than critical reflection alone. The use of PT did not seem to have any effect. Autobiographical reflexivity combined with critical reflection appeared to be an equivalent option that participants appreciated more than solely critical reflection.

ARTICLE HISTORY

Received 18 September 2020
Accepted 2 February 2021

KEYWORDS

autobiographical reflexivity; persuasive technology; critical reflection; involvement; reflection level; blended learning; higher education; social work

Introduction

The development of professional identity (PI) has been extensively investigated in recent years, particularly in higher education contexts (Dickinson et al., 2020; Marin et al., 2018; Trede et al., 2012). Due to economic, societal, interprofessional and technological developments as well as labor market changes, (future) professionals will have to adapt in their professional role more frequently than previously before

CONTACT Monique M.J. Engelbertink  m.m.j.engelbertink@saxion.nl  Research Centre Educational Innovation & Effectiveness, University of Applied Sciences Saxion, Handelskade 75, Deventer 7417 DH, The Netherlands

This article has been republished with minor changes. These changes do not impact the academic content of the article.

© 2021 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group.

This is an Open Access article distributed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivatives License (<http://creativecommons.org/licenses/by-nc-nd/4.0/>), which permits non-commercial re-use, distribution, and reproduction in any medium, provided the original work is properly cited, and is not altered, transformed, or built upon in any way.

(Engelbertink, Kelders, Woudt- Mittendorff, & Westerhof, [under review](#)). Professionals with a strong PI know what they stand for in their work: they are aware of their competences (Schilder, 2013), are confident in their work (Kelchtermans, 2009; Ryan & Carmichael, 2016; Schilder, 2013) and have the belief and feeling that their (future) PI suits their 'self' (Meijers & Kuijpers, 2014). As PI development is thus important for students in higher education, this also goes for Social Work students. Social Work students with a strong PI demonstrate a significant relationship with commitment to their future profession, with the feeling of belonging to a professional group, and with strategies of information seeking about (future) work (Engelbertink et al., [under review](#)). Additionally, students with a strong PI are more motivated to learn, proactive in their profession, use their network and have confidence in their career choice (Meijers & Kuijpers, 2014). Research shows that Social Work students (Adams, Hean, Sturgis & Clark, 2006; Engelbertink et al., [under review](#)), and students in general, have a low PI (Meijers & Kuijpers, 2014). Therefore, universities must support their students to achieve a stronger PI (Trede et al., 2012). Though, there is little insight in which method is most suitable to achieve this. This study assesses the added value of autobiographical reflexivity and persuasive technology within a blended learning course for critical reflection among Social Work students.

The review of Trede et al. (2012) shows that most studies find practical learning to be the most critical factor in strengthening students' PI whereas the curriculum of a university and its learning context are not seen as all-determining. Additionally, the personal factors of students have most influence on the reinforcement of PI, in particular developing student agency, self-image and self-confidence. Levy et al.'s (2014) research among Social Work students also found evidence that students' personal sources are related to PI and shows that student satisfaction with their supervision is the most important direct factor in strengthening the PI. Within supervision, an integration takes place between learning in practice and theoretical learning at university whereby use is made of critical reflection (Graham, 2017). In Trede et al.'s review (2012) it becomes clear that critical reflection is an important method to support students in strengthening their PI. Most critical reflection studies focus on writing about current functioning (Trede et al., 2012; Whitaker & Reimer, 2017). Critical reflection has been shown to empower professionals, as well as encouraging them to broaden and deepen their methods of work through reflection of their current actions across various perspectives (Alsina et al., 2017; Körkkö et al., 2016). In previous studies, students have reported that critical reflection reinforces their PI (Whitaker & Reimer, 2017).

A relatively new development in research in higher education is the use of autobiographical methods, such as: storytelling, narrative career counselling, Life Story Reflection and autobiographical reflection where reflecting on the past, present and future is intertwined (Lengelle & Meijers, 2014; Marin et al., 2018; Moenandar & Huisman, 2019; Spector-Mersel, 2016). The latter sources all argue for narrative methods based on professional experiences and theoretical reflections. These reflection methods relate to the student's past aiding them in becoming aware of their identity (Friesen & Besley, 2013), in turn contributing to their PI development. This integrates their identity with their future PI (Adams et al., 2006; Lanas & Kelchtermans, 2015). Relevant reflection

processes students enter through narrative autobiographical reflection are characterized by writing, thinking through an internal dialogue, taking distance, reformulating, wondering and creating new perspectives, stories and renewing their sense of identity and PI (Lengelle & Meijers, 2014; Roberts, 2019). Additionally, the story or reconstruction of the student's PI is reformulated through exchange with other students (Lengelle & Meijers, 2014; Moenandar & Huisman, 2019). Inspired by Bakhtin's theory, Miehl and Moffatt (2000) argue that it is beneficial for, for example, Social Workers to be able to reconstruct their selves across various encounters with others. Empathy being a key component. The (re)construction of the PI throughout the career is based on *reflexivity*: Empathizing with another person also changes one's own self because the other person adds something to our own perspective of reality and the self. Therefore, we must distinguish reflection from reflexivity: Reflection is concerned with reflecting on an event in the near past or present, whereas reflexivity means reflecting on multiple layers and perspectives of one's self (Dickinson et al., 2020; Lengelle & Meijers, 2014; Miehl & Moffatt, 2000; Spector-Mersel, 2016). Exposure to several events from the past help to uncover the deeper layers to one's 'self'. Students are *reflecting* via a critical reflection process, and during autobiographical reflection they are concerned with *reflexivity*. This research therefore emphasizes autobiographical reflexivity.

So what is known so far from research on the added value of autobiographical narrative interventions? In an explorative qualitative study, Lengelle et al. (2013) concluded—with some caution—that 16 students who followed a two-day creative writing course at the beginning and at the end of their internship were more vulnerable, wrote more about (positive and negative) emotions, and explored their choices and wishes more than the 19 students who did not receive a writing task. Furthermore, the students in the experimental group seemed to engage in a more creative way, allowing them to reflect on their careers on a positive emotional and cognitive level compared to the control group. Though, this was not numerically significant (Lengelle et al., 2014). In another study, Roberts (2019) concluded from an analysis of more than 500 reflective reports, and additional focus groups with students and instructors, that autobiographical writing stimulated students to reflect more deeply on their life experiences and could better interpret the meaning of this experience than students without autobiographical writing assignments. The method appeared particularly supportive for critical reflection, and personal and professional growth.

However, existing studies have not employed strong experimental designs that allow to conclude whether autobiographical reflexivity contributes more to PI development than critical reflection. The current research therefore uses a Randomized Control Trial (RCT) to assess the added value of autobiographical reflexivity on the PI. The aim of the research is to demonstrate the added value of autobiographical reflexivity (with persuasive technology (PT)) for the PI development of Social Work students. The main research question of this study is:

RQ1. Is autobiographical reflexivity in combination with critical reflection more effective in stimulating PI development of Social Work students than critical reflection alone?

There are several resources which might influence the PI of beginning professionals, including learning motivation, career reflection, choice certainty, drop out threat,

reminiscence skills, internal locus of control, and well-being (Engelbertink et al., [under review](#); Kuijpers et al., 2010; Meijers & Kuijpers, 2014). Therefore, we were interested in assessing whether autobiographical reflexivity also contributes to these resources:

RQ2. Is autobiographical reflexivity in combination with critical reflection more effective in stimulating resources for PI development of Social Work students than critical reflection alone?

Furthermore, it was interesting to explore whether the level of reflection that students achieved after the course depended on their reflection method:

RQ3. Do students who receive autobiographical reflexivity in combination with critical reflection have a higher level of reflection than students who received critical reflection alone?

The current research used blended learning methods for critical reflection and autobiographical reflexivity. Engagement with an online learning environment, as part of a blended method, is important in order for students to work in a way as developed by a teacher (Bernard et al., 2014; Engelbertink et al., 2020b). To increase student engagement, persuasive technology (PT) can be used in an online intervention. PT are techniques that influence people's behavior in a positive way without coercion or deception (Oinas-Kukkonen & Harjuma, 2009). The blended learning course for autobiographical reflexivity was developed in an earlier participatory design with a focus on PT to motivate students in the online part of the reflection course (Engelbertink et al., 2020b). PT could help motivate and engage students during the online part of a blended learning course without interference of teachers (Engelbertink et al., 2020b; Kelders et al., 2012; Oinas-Kukkonen & Harjuma, 2009). PT may support students in their academic assignments, for example, by guiding them with step-by-step instructions through materials in a personalized way (PT tunneling combined with personalization), or through receiving encouraging messages when partial assignments have been completed (PT praise). In an evaluation study, students reported that they were indeed motivated by most PT strategies, as they received support for their assignments via their computer in dialog form (Engelbertink et al., 2020a). However, little quantitative research is currently available regarding the effects of PT on perceived persuasiveness and involvement in an educational setting (Engelbertink et al., 2020b, 2020a).

RQ4: Does the use of PT increase experienced persuasiveness in Social Work students during a blended learning course for critical reflection and autobiographical reflexivity, in comparison to a blended learning course for critical reflection and autobiographical reflexivity without the use of PT?

RQ5: Does the use of PT increase personal involvement in Social Work students during a blended learning course for critical reflection and autobiographical reflexivity, in comparison to blended learning courses for critical reflection and/or autobiographical reflexivity without the use of PT?

Finally, we were interested in the experiences of teachers and students. Here, we explored the added value of the critical reflection lessons and the autobiographical reflexivity in the development of the students' PI.

RQ6: What are the experiences of teachers and students regarding the influence of critical reflection and autobiographical reflexivity on the development of student's PI and their involvement during the lessons?

Method

Design

The purpose of our study was to use a RCT using three parallel groups within a blended learning course offering: (A) Critical reflection; (B₁) Critical reflection in combination with autobiographical reflexivity; (B₂) Critical reflection in combination with autobiographical reflection with the use of PT in the online part of the course. There were three measurement points where students completed online questionnaires. These were baseline in January (after three lessons of critical reflection, but before the autobiographical reflection started, at the time, as the conditions then started to vary); post-course in May (when the course was finished); and at follow-up at the end in June (7 weeks after the course ended. At this point, all reflection lessons in that study year were finished). In addition, at the time of the post-course, grades from the students' reflection reports were collected and focus groups were held. A total of 17 classes were randomly assigned to each of the two main conditions ('critical reflection condition A' versus 'critical reflection in combination with autobiographical reflection'), and the second condition B was also randomly divided into two subgroups ('B₁' and 'B₂'). This was a so-called nested sample (see Table 1). Within the article, it will be indicated whether it concerns main condition B (both B₁ and B₂) or each of the nested conditions B₁ or B₂.

There were 14 teachers who taught the 17 participating classes. There were three teachers who taught two classes within the same condition: one in condition A, one in condition B₁ and one in condition B₂. Teachers first indicated whether they wanted to give the critical reflection course or the one combined with autobiographical reflection. 2 out of 11 teachers were randomly allocated to condition A, as excessive interest in teaching the combined course was communicated. The remaining nine teachers were randomly allocated to condition B₁ and B₂ for the combined course. All teachers were female, except one male teacher for condition A. All were qualified teachers with a Master's or Bachelor's degree and with work experience in the field of Social Work. They had additionally all worked for the Social Work program for at least four years. On a voluntary basis, the teachers were asked to attend a two-hour workshop on critical reflection. The teachers in condition B₁ and B₂ were also able to join a two-hour workshop on autobiographical reflection. The workshop was offered several times and had a 70% attendance rate. To stimulate as much unity as possible in the lessons, the first author made corresponding PowerPoints for each lesson per main condition (condition

Table 1. Overview of study conditions.

Condition	Groups (N)	Lesson structure	Formative assignments	Summative assessment
A	8 (99)	8 lessons in critical reflection	4 online assignments in critical reflection	Written reflection report (rubric NARRA ^a)
B ₁	4 (56)	4 lessons in critical reflection and 4 lessons in autobiographical reflection	4 online assignments in autobiographical reflection	Written reflection report (rubric NARRA ^a)
B ₂	5 (64)	4 lessons in critical reflection and 4 lessons in autobiographical reflection	4 online assignments in autobiographical reflection with PT	Written reflection report (rubric NARRA ^a)

^abased on the Dutch translation of the Rubric for Narrative Reflection Assessment (NARRA) (Alsina et al., 2017)

A and condition B). These PowerPoints were made available to students in their Learning Management System (Blackboard) and linked to their condition.

Procedure

Students were unaware of the three conditions and followed the obligatory course their teacher was allocated to as a regular part of the academic program. The students do an internship during this course period, which makes it possible for the students to choose a meaningful experience from their internship on which to reflect. The course is led by their study career counselor, who teaches them throughout the academic year. Because of this natural integration of the research, it is not expected that the three conditions will be perceived as completely different by the students if they discuss the lessons with each other. The teacher supports them during the lessons to the moment when they have to hand in their reflection report. In terms of content, receiving four lessons of critical reflection was considered enough for students to be capable of writing their reflection report. Students in condition B were therefore not considered to be disadvantaged. It was explained to students that a study was being conducted on their professional development and would be investigated at three timepoints across the academic year. During each part of the data collection (questionnaires, reflection report grades linked to the questionnaires, and focus groups), students independently decided whether or not to participate. Permission from the ethics committee was granted for this study.

Questionnaires

During the first and second measurement points, students completed the questionnaires online during their reflection lessons in the presence of the first author. For the third measurement, the first author sent the 17 contacts from each class a link to the questionnaires. These contacts then forwarded the questionnaires to the classes' WhatsApp group. Students could collect a gift from their teacher as a reward for participating.

Reflection reports

During the post-course measurement, permission was requested from the students to include their reflection report's grade within this study. The grade that could be obtained was between 0 and 10. The teacher only assessed reflection reports of students in their own class(es). To guarantee anonymity, an administrator documented the grades on the basis of student matriculation numbers received from the first author. Only those grades were included, as students could rewrite their report acknowledging suggestions from teacher feedback if undergoing a re-sit.

Focus groups

Student participants for the focus groups were recruited on a voluntary basis by the first author visiting classes. The teachers of the focus groups were also recruited by the first author on a voluntary basis via e-mail. Three focus groups were held at the post-course measurement. During the three focus groups, the first author was the moderator while

a fellow researcher took minutes and monitored the time. Respondents provided consent, with each focus group lasting between 45 and 60 minutes and was a one-off. Based on the minutes, a report was produced that reflected the experiences of the respondents. The reports were submitted to the respondents for approval.

Intervention

All conditions

All three conditions started with three lessons of critical reflection and additionally ended with critical reflection in the eighth lesson. In teaching critical reflection, the Rubric for Narrative Reflection Assessment (NARRA) was implemented (Alsina et al., 2019, 2017) where students were encouraged to reflect on a meaningful situation at a critical reflection level. This rubric was used throughout the lessons and as a summative assessment (Table 1). The students wrote out a meaningful situation; they then reflected on a micro, meso and national level. Other elements included reflecting on value judgments, emotions and in the Dutch version a link was made with their PI according to Kelchtermans' theory (Kelchtermans, 2009). In accordance with the latter theory, they were asked to reflect on the following five PI components: self-image; self-esteem; job motivation; task perception; and future perspective. The NARRA built on the reflection cycle of Korthagen, yet added reflection on previous experiences, including the student's autobiography (Alsina et al., 2017). There was more reflection than reflexivity because students reflected on a specific current event; whereas reflection or reminiscence on identity development in dialogue with others received little attention.

Condition A

Condition A received four additional critical reflection lessons (Table 1). The eight critical reflection lessons were linked to four online reflection assignments. The students' internships and behavior in their first and current second academic year were central: the student's work motivation, their own actions in internships, reflection on Social Work organizations and at a macro level; and their internship goals. The four online assignments were placed in Blackboard.

Condition B

Condition B received four additional autobiographical reflection lessons (Table 1). The autobiographical reflexivity intervention 'Tell your Story' (Engelbertink et al., 2019) was based on the method 'The stories we lived by' (Korte et al., 2012; Westerhof, Bohlmeijer et al., 2017), and used autobiographical reflexivity with the aim of strengthening the PI of students. 'The stories we lived by' was found to be effective in the face-to-face variant—though it had a different target group, namely elderly people with mild depressive symptoms (Korte et al., 2012). However, in the study where the online variant was offered to older adults with mild depression, it became recommended to choose a blended variant in the future due to its lack of effectiveness (Westerhof, Lamers et al., 2017). Using a blended variant, participants could write down their memories at their preferred pace,

and then in face-to-face meetings they could more deeply reflect on their meaningful memories. In the current intervention, students wrote their autobiography from three online modules using various themes. The themes covered early years, adolescence, work and care, love and friendships, and there was an optional fourth online module on the art of living and grief. During the fifth and final online module, students were supported in discovering some of the core themes that infiltrated through their life themes uncovering a deeper layer of meaning. Similar to critical reflection, the students were encouraged to examine their experiences through perspective changes, as well as reflecting on Kelchtermans' five components of PI. The five online modules were placed in Blackboard.

Parallel to the four compulsory online modules, the students discussed their written assignments in class with their fellow students and teacher. Here, they could reflect more deeply on their meaningful memories. Through the empathic listening process, the view of their own 'self' could increase, making them aware of their identity and PI across different perspectives and through the connection between past, present and future. Reflexivity was central.

Supplement to condition B₂

The online homework assignments of condition B₂ were designed with PT (Table 1). The PT used were based on the Persuasive Systems Design (PSD) model (Oinas-Kukkonen & Harjumaa, 2009). Use was mainly made of technology that supported the student in carrying out this task which promoted dialogue between human and computer, and promoted the credibility of the method. An example of a support task used within the online course was that students could choose from different assignments and were then guided step-by-step through each. If the student was exploring their PI well by completing an assignment, then the computer would express messages of encouragement, making this an example of dialogue between the human and computer. Almost no use of technology has been made that promotes cooperation between students. For a detailed description of the used PT and the pilot evaluation of the online modules, refer to our other studies (Engelbertink et al., 2020b, 2020a).

Participants

The study included a total of 244 Dutch second year Social Work students from the academic year 2017 to 2018. They studied at Saxion University of Applied Sciences in the east of the Netherlands at Bachelor level. A class of students who resat the previous year did not participate in the study; they had already taken the reflection classes previously. One class had eight students (condition B₂), while the other classes each contained 12 to 17 students (Table 2).

Descriptive analyses showed no significant differences in gender and age between the three conditions. More women than men participated across all of the conditions, with the mean age being 21 years (min. age 17—max. 30; SD = 2.3). By post-course, 23 students had stopped or delayed their studies.

A multivariate ANOVA showed that the baseline measurements of the primary and secondary outcome measures did not differ significantly across the three conditions (for PI: $F(2, 184) = 0.23$; $p = .795$). Therefore, randomization succeeded.

Table 2. Descriptive statistics per measurement point and condition.

	t0	t1	t2
Condition A			
8 classes			
<i>N</i> (%)	87 (46%)	70 (42%)	35 (47%)
<i>Gender</i>	75 (86%) female	61 (87%) female	31(89%) female
Condition B₁			
4 classes			
<i>N</i> (%)	46 (25%)	42 (26%)	19 (25%)
<i>Gender</i>	41 (89%) female	37 (88%) female	16 (84%) female
Condition B₂			
5 classes			
<i>N</i> (%)	54 (29%)	53 (32%)	21 (28%)
<i>Gender</i>	43 (80%) female	41 (77%) female	18 (76%) female
Total			
17 classes			
<i>N</i> (% response)	187 ^a (77%)	165 ^{aa} (75%)	75 ^{aa} (34%)
<i>Gender</i>	159 (85%) female 28 (15%) male	139 (84%) female 26 (16%) male	65 (87%) female 10 (13%) male

^aresponse of the initial 244 participants; ^{aa}response of the 221 participants after the drop-out.

Of the 164 students at the post-course measurement, 145 agreed to link their reflection report grade to their completed questionnaires. Of these students, 116 were graded in the first assessment (condition A: 41 students; condition B: 75 students).

Regarding the three focus groups, three female teachers (one from condition A and two from condition B), three students (condition A: two females, one male) and another three students (condition B: two females, one male) participated. The participating students from condition A had the same teacher, but were from two different classes. The participating students in condition B had lessons from three different teachers, so were from three separate classes.

Instruments

Questionnaires

The primary outcome of the RCT was PI, as measured with the *Career Identity* scale (Kuijpers & Meijers, 2009; 10 items, 4-point scale). The 2016 version of this scale was used and retrieved from Kuijpers. The scale has a response scale ranging from 1 = Strongly disagree to 4 = Strongly agree. A sample item is: 'I have discovered what kind of work really suits me'. Cronbach's alpha was respectively .85; .82; .88. Secondary outcomes were learning motivation, career reflection, certainty of choice, drop-out threat, reminiscence, internal locus of control, and well-being. Learning motivation was measured using the *Learning Motivation* scale (Kuijpers & Meijers, 2009; 10 items; 4-point scale). The response scale ranges from 1 = Strongly disagree to 4 = Strongly agree. A sample item is: 'At this course, I can easily keep my attention on my studies'. Career reflection was measured using the Career Reflection scale (Meijers et al., 2013; 10 items; 4-point scale). A response scale ranging from 1 = Strongly disagree to 4 = Strongly agree was used. A sample item is: 'If something goes well at school, I think about what my talent is'. Certainty of choice was measured using Kuijpers and Meijers (2009) scale (5 items; 6-point scale). All items

run from negative to affirmative. Starting with ‘certainly not’ or ‘not at all’ up to various affirmative response scales such as ‘yes, very much’ or ‘yes, certainly’. An example item is: ‘Is this study program completely your choice?’ The higher the score for choice certainty, the more confident the student feels about his choice of study. The drop-out threat was also measured using Kuijpers and Meijers (2009) scale (4 items; 4-point scale). A response scale ranging from 1 = Strongly disagree to 4 = Strongly agree was used. A sample item is: ‘I am going to quit this study program’. The higher the score on this scale, the higher the chance that the student will want to quit the study program. The *Identity* part of the Reminiscence Functions Scale (RFS) (Webster, 1993; 6 items; 6-point scale) measured reminiscence. A response scale ranging from 1 = Never to 6 = Very often was used. Every item begins with: ‘When I look back on my life it is ...’. A sample item is: ‘When I look back on my life it is ... because memories from my past help me determine who I am today’. The Internal locus of control was measured using Kuijpers and Meijers (2009) scale (6 items; 4-point scale). The response scale ranges from 1 = Strongly disagree to 4 = Strongly agree. A sample item is: ‘By working hard, I can later become what I want’. The *Mental Health Continuum-Short Form* (MHC-SF) (Lamers et al., 2011) measured well-being, dividing it into three subscales: *emotional* (3 items), *social* (6 items) and *psychological* (5 items). Every item begins with ‘In the past month, how often did you feel ...’. The response scale ranges from 1 = Never to 6 = Every day. A sample item is: ‘In the past month, how often did you feel ... that you had warm and trusting relationships with others’. At all three measurement points within this study each scale had adequate-to-good reliability (Cronbach alpha scores ranged from .70 to .89).

The persuasiveness of the blended learning course coupled with the students’ involvement, due to the PT used, was measured using two scales. Persuasiveness was measured at post-course using the Perceived Persuasiveness Questionnaire (PPQ) (Lehto et al., 2012; 15 items divided into five subscales: *task* (3 items), *dialogue* (4 items), *reliability* (4 items), *social support* (1 item) and *perceived persuasiveness* (3 items); 7-point scale). The response scale ranges from 1. Completely disagree to 7. Completely agree. Sample items are: ‘The online module stimulated me’ (subscale dialogue) and ‘The online module influenced me’ (subscale perceived persuasiveness). Cronbach’s alpha was .92 for the total scale. An additional subscale within the PPQ—*effort* (3 items)—was not included in the total scale, due to its low reliability. Personal involvement was additionally measured at post-course, and follow-up, with the Personal Involvement Inventory (PII) (Zaichkowsky, 1994; subscales Affective Involvement and Cognitive Involvement both 5 items; 7-point scale). Every item begins with ‘The Professional Development course in periods 2 and 3 (the lessons and the four homework assignments) was for me ...’. The answers were presented on a seven-point scale with a negative description of a word on one side and a positive expression of that word on the other side. No further words were given to the scale options 2 to 6. An example of an Affective Involvement item is: boring versus interesting and an example of a Cognitive Involvement item is: not important versus important. Cronbach’s alpha was respectively .89 and .91 for Affective Involvement and .86 and .93 for Cognitive Involvement.

Reflection reports

Previously mentioned, the NARRA rubric was used during the lessons and as a summative assessment to encourage the students to reflect at a critical reflection level.

Focus groups

A script was followed as part of the focus groups. The focus group concentrated on answering two main questions: How was the course experienced?; What improvements are needed? These related to three main areas: face-to-face lessons, online homework and the NARRA rubric. Teachers spoke from their own experience and indicated how they predicted the students experienced the courses.

Data analysis

Univariate descriptive statistics (percentages, means, and standard deviations) were used to describe the group of participants. Bivariate statistics (chi-square, t-test, analysis of variance (ANOVA)) provided insight into differences between the conditions at the start of the course.

RQ1 and RQ2

To answer RQ1 and RQ2, the two main conditions (A versus B) were compared to one another using the questionnaires for the primary and secondary outcomes across time (effectiveness). To analyze the effects of the intervention, a mixed model analysis (using the unstructured covariance) was carried out using correlated residuals for the repeated measure 'time' (baseline, post-course, and follow-up) within the random effect for 'subject'. We specified two fixed factors: condition (critical reflection versus autobiographical reflection) and time (baseline, post-course, and follow-up measurement), as well as their interactions.

RQ3

To answer RQ3, the two main conditions (A versus B) were compared based on the student's grade in their summative assessment reflection report based on the NARRA. An independent *t*-test was applied to calculate the differences between the two conditions with respect to their reflection report grade.

RQ4

RQ4 was answered by comparing the two autobiographical reflexivity courses (B₁ without PT versus B₂ with PT) with one another on their perceived persuasiveness at the time of the post-course. A *t*-test was applied to determine any perceived differences in persuasiveness between condition B₁ and B₂ at the time of the post-course.

RQ5

RQ5 was answered by comparing the three conditions with each other on the personal involvement questionnaire (post-course and follow-up). To calculate the effects of the intervention for involvement, two ANOVAs were carried out at the post-course and follow-up measurement.

RQ6

The first author was the interviewer, using a second researcher for minute-taking. Based on these minutes, a report was produced that reflected the respondents' experiences. The minutes were then submitted to the respondents for approval. A content analysis was performed based on the minutes taken which explored positive experiences, negative experiences and points for improvement suggested by the respondents. During the analysis, a fourth theme 'reflection on education in general' was added.

Results

RQ1 and RQ2: Effectiveness of PI and factors

Table 3 displays the results of the mixed models for the primary outcome (PI) and the secondary outcomes. For PI, there was no significant interaction effect between condition and time. However, there was a significant effect over time across all conditions; PI had improved between baseline and follow-up.

Furthermore, there were no significant interaction effects between condition and time for all of the secondary outcomes. For choice certainty and social well-being, there was a significant effect over time. Across all conditions, the choice certainty was higher at the post-course and follow-up measurement compared to baseline. Across all conditions, social well-being had improved at the follow-up measurement compared to baseline.

When examining reminiscence, there was a significant main effect of condition. The students of main condition B scored significantly higher on reminiscence than students from main condition A.

RQ3: Reflection level

The analysis of the reflection level through reflection reports showed no differences in grades between the two main conditions (condition A: mean = 5.9, SD = 1.6; condition B: mean = 6.0, SD = 1.6, $t(114) = -0.235$, $p = .815$). These grades corresponded to reflection level 3, 'reflection', in association with the NARRA rubric.

RQ4: Persuasiveness

The analyses of perceived persuasiveness between condition B₁ and B₂ at the time of the post-course showed no significant differences across all five subscales (Table 4).

RQ5: Involvement

Table 5 displays the results from the ANOVAs for affective and cognitive involvement. At post-course, the students in the nested conditions B₁ and B₂ scored significantly higher on affective and cognitive involvement than students from condition A. Affective involvement: $F(2, 163) = 9.76$, $p < .01^{**}$. Cognitive involvement: $F(2, 161) = 10.05$, $p < .01^{**}$. Post hoc comparisons using the Bonferroni test indicated that the mean score

Table 3. Primary and secondary outcomes two conditions (Estimated Marginal Means).

Variable (range)	Condition ^a	Baseline		Post-course		Follow-up		Cohen's d at follow-up	Condition	Time	Condition x Time
		Mean	SE	Mean	SE	Mean	SE				
PI	A	2.7	.06	2.8	.05	2.8	.07	.23	F (1, 215.8) = 0.3	F (2, 101.7) = 6.1**	F (2, 101.7) = 1.2
	B	2.7	.05	2.8	.05	2.9	.07	.26	F (1, 211.2) = 2.1	F (2, 105.1) = 2.0	F (2, 105.1) = 0.7
Learning motivation	A	2.9	.05	2.7	.06	2.7	.07	.27	F (1, 217.7) = 1.9	F (2, 99.2) = .05	F (2, 99.2) = 0.5
	B	2.7	.05	2.7	.05	2.6	.06	.16	F (1, 208.8) = .05	F (2, 110.6) = 3.3*	F (2, 110.6) = 0.8
Career reflection	A	2.8	.05	2.8	.05	2.8	.06	.00	F (1, 148.7) = 1.2	F (2, 102.2) = 1.2	F (2, 102.2) = 1.5
	B	2.9	.05	2.9	.04	2.9	.06	.63	F (1, 194.3) = 4.1*	F (2, 103.5) = 3.0	F (2, 103.5) = 0.2
Choice certainty	A	4.7	.09	4.7	.10	4.8	.10	.24	F (1, 199.9) = .04	F (2, 103.9) = .87	F (2, 103.9) = 1.2
	B	4.6	.08	4.8	.09	4.9	.10	.14	F (1, 208.3) = 0.1	F (2, 105.5) = 5.0**	F (2, 105.5) = 1.3
Drop out threat	A	1.3	.04	1.2	.05	1.2	.06	.13	F (1, 202.6) = 0.1	F (2, 107.2) = .35	F (2, 107.2) = 1.2
	B	1.2	.04	1.2	.04	1.2	.05				
Reminiscence	A	4.4	.07	4.4	.08	4.3	.11				
	B	4.5	.07	4.5	.07	4.7	.10				
Int locus of control	A	3.1	.05	3.1	.06	3.0	.07				
	B	3.1	.05	3.1	.05	3.0	.07				
Emot well-being	A	4.4	.10	4.4	.10	4.1	.15				
	B	4.3	.09	4.3	.09	4.3	.13				
Soc well- being	A	3.3	.09	3.5	.10	3.4	.12				
	B	3.2	.08	3.4	.09	3.5	.11				
Psych well- being	A	4.2	.10	4.3	.10	4.1	.13				
	B	4.1	.09	4.1	.08	4.2	.12				

^aA = critical reflection B = critical reflection plus autobiographical reflection *p < .05; ** p < .01

Table 4. Persuasiveness nested conditions.

	Condition B ₁	Condition B ₂	T-Test		
	Mean (Std.)	Mean (Std.)	T	df	Sig. (2-sd)
Task	4.67 (1.14)	4.79 (1.14)	-.388	58	.699
Dialogue	4.37 (1.05)	4.42 (.98)	-.172	58	.864
Reliability	4.84 (.96)	4.64 (.84)	.768	58	.445
Social support	4.34 (.85)	4.51 (1.03)	-.660	58	.512
Perceived persuasiveness	4.40 (1.12)	4.63 (1.06)	-.761	58	.450

Table 5. Personal Involvement Inventory (PII) three conditions (ANOVA).

Variable (range)	Condition ¹	Post-course		Follow-up	
		Mean	SD	Mean	SD
PII Affective	A	3.4	.87	3.8	1.2
	B ₁	4.1**	.96	4.5	1.0
	B ₂	3.9**	.81	4.1	1.2
PII Cognitive	A	4.1	1.1	4.3	1.3
	B ₁	5.1**	1.0	5.1	1.0
	B ₂	4.6*	1.0	4.4	1.2

*p < .05; ** p < .01

of condition B₁ and B₂ differed significantly from the mean score of condition A. The mean score of condition B₁ did not differ significantly from the mean score of condition B₂. At follow-up, the differences between the three conditions had disappeared for affective and cognitive involvement.

RQ6: Focus groups

Results related to two questions (Appendix 1). Question 1 was: ‘How was the course experienced?’ Students of main condition A experienced difficulty using the rubric and did not find the blended learning course useful. One student did not display a link between identity and PI. The three students stated it would be useful to have a course which runs from first year through to fourth year, with each year expanding on the previous year. The focus group provided students with more insight into the possibilities of reflection through the rubric and indicated that they found this useful.

The students from main condition B were generally satisfied with the blended learning course. They all had a positive experience using the online modules with autobiographical reflexivity, as they had gained insights about their own values and standards. One student expressed that they found it to be informative to discuss personal matters in the classroom; the need for this was shared among all three students. However, the classroom atmosphere did not always feel safe for sharing personal experiences. Although the rubric was seen as educational, the students found the language too complicated. Additionally, when using the rubric, more attention was given to the criteria as opposed to the reflected experience itself.

The teachers (from main conditions A and B) indicated that most of the students had worked hard on the online homework assignments, and that the rubric was useful for learning to critically reflect because it taught the students to reflect across various perspectives. Condition B stimulated the intrinsic motivation of students as the online module started with their own ‘self’. During the classes, the homework stimulated thorough discussions and questions, as well as promoting socializing throughout classes.

This condition encouraged critical reflection and the rubric was described as complete and useful. Despite the rubric, students continued to find it difficult to reflect.

Question 2 was: ‘What improvements are needed?’ All respondents (students and teachers) indicated that main condition B was preferred to teach students to reflect critically with respect to main condition A ([Appendix 1](#)). The reasoning provided by the respondents was that students showed more involvement in the autobiographical reflexivity as it started with themselves; the themes were inviting to reflect on and they connected identity with the PI. According to the students and teachers from main condition B, the online modules did not require any adjustments. The students from main condition B indicated that the course was helpful to learn to reflect critically, but in particular the face-to-face lessons about the rubric could be adapted to gain more in-depth critical learning reflection. The respondents from all three focus groups indicated that talking in subgroups about their own life experiences and/or internships would help in learning to critically reflect. Input could come from the online modules in which autobiographical reflexivity is central. A requirement for talking in subgroups, or providing each other with feedback, would be for students to already understand what reflection is, what it is for and how to question one another. More attention to continuous reflection on the learning pathway during the first and second year of the program is needed. According to all respondents from each of the focus groups, it would be better if the rubric was written in simpler terms with a reduction in the number of sub-criteria.

Conclusion and discussion

The aim of this study was to assess the added value of autobiographical reflexivity (with PT) for the development of PI within a group of Social Work students. The results displayed no clear differences between the conditions ‘critical reflection’ versus ‘critical reflection’ when combined with autobiographical reflexivity in relation to the outcomes in PI, the factors and the achieved reflection level. However, there was more affective and cognitive involvement (shown both in the questionnaire and in the focus groups) when students followed a blended learning module for critical reflection which incorporated autobiographical reflexivity. The focus groups showed that due to autobiographical reflexivity, students had more intrinsic motivation for online homework; there was enhanced discussion and questions throughout the lessons; and students were more interested in each other thus learnt more about one another’s lives.

Regardless of the conditions, the RCT demonstrated similar changes namely growth in PI, choice certainty and social well-being and stability in the following sources: learning motivation; career reflection; drop-out threat; reminiscence; internal locus of control; emotional well-being and psychological well-being. Previous studies have suggested the importance of narrative interventions, but are yet study their effectiveness ([Lengelle et al., 2014, 2013](#); [Moenandar & Huisman, 2019](#); [Roberts, 2019](#); [Spector-Mersel, 2016](#)). In this study, improvements were shown in PI, security of choice and social well-being similar to the improvements in the condition with critical reflection alone. Autobiographical reflexivity seemed as effective as ‘regular’ critical reflection. However, as there was no control condition without reflection classes, we could not distinguish between the changes in PI; choice security and social well-being being related to reflective education or whether these were changes that regularly occurred in second year Social Work

students. There were many indications that reflection had an important influence on the development of PI (Austin et al., 2020; Engelbertink et al., *under review*; Kuijpers & Meijers, 2011; Trede et al., 2012), though some resources also played a role as learning motivation, internal locus of control and student well-being were positively related to a strong PI (Engelbertink et al., *under review*). Additionally, students from prevocational and secondary vocational education had shown that internal locus of control, learning motivation and PI were linked (Meijers et al., 2013). Conversely, although internal locus of control played an important role in the development of career competences in higher education, reflective dialogue between teacher and student was even more influential (Kuijpers & Meijers, 2011). Therefore, reflection certainly seemed to play a critical role in developing students' PI with previously mentioned studies showing a correlation between the various factors and PI. Within this RCT, these relationships were not found across all factors. Perhaps the resources acted as moderating variables within the relationship between reflection and PI: students holding more resources may display deeper development in reflection skills and their PI. More longitudinal research is needed to know how students' PI can be strengthened, and how reflection and each of the resources can contribute to this.

Corresponding with other qualitative research on narrative teaching methods, autobiographical reflexivity seemed to help students in critical reflection (Lengelle & Meijers, 2014; Roberts, 2019). This was demonstrated in this study, as students were more affectively and cognitively involved, more intrinsically motivated, and more active in class discussions. Increased student involvement in narrative interventions had already been recognized in qualitative studies (e.g. Moussa-Inaty, 2015); our study confirmed this both qualitatively and quantitatively. Moenandar and Huisman (2019) found that narrative teaching methods could increase intrinsic motivation; this study also confirmed this finding. Furthermore, the power of narrative methods during face-to-face classes may lie in the conversations that students had in response to each other's autobiographies, as these provoked interest for both the students and teachers. An explanation for this may be that these encounters act in addition to the 'self' (Miehls & Moffatt, 2000). The conversations could also lead to an increase in critical reflection by broadening the student's perspective (Körkkö et al., 2016). This study demonstrated the advantages of combining reflection with autobiographical reflexivity, having been previously advocated and theorized by Graham (2017) and Spector-Mersel (2016). The method used within this study allowed students to think about the way in which they have included their own 'self' in their professional actions. Through this, they made choices across various perspectives at a micro and national level (such as clients, colleagues, organizational interest and professional codes). Our results give a new impulse to reflection education for Social Work students. By adding autobiographical reflexivity, due to the high cognitive and affective involvement, it may be possible to create more depth while reflecting on meaningful experiences that students have during their internship. Autobiographical reflexivity makes it possible to integrate a student's identity and their PI.

In this study, the added value of PT did not increase persuasiveness among students. In line with this, increased involvement did not appear to be due to the PT used, but to the autobiographical element instead. Thus, it does not seem necessary to use PT when designing an online module. An explanation for the lack of effect could be that the content of this online module was already interesting and provoking enough, making

persuasiveness less necessary to motivate students to work independently. Lastly, the differences between the two modules may have been minimal as the research was conducted in a 'real life' context. Nevertheless, the use of PT within higher education offers the potential to make an online module attractive and persuasive, provided that the PT is appropriately tailored to the content of the module (Engelbertink et al., 2020b, 2020a; Kelders et al., 2012).

Limitations and future research

The present findings should be considered in light of some limitations. Although we can be satisfied with the response from the first two measurements, the third measurement is less satisfying. Unlike the other two measurements, measurement three was taken after an individual assessment instead of during a lesson. This made it more difficult to stimulate students, despite there being a reward offered as an incentive. It would therefore be recommended to take each measurement during a lesson in favor of the response. As compensation for possible low responses, we used mixed methods in this study which provided insight into the research questions from various perspectives. The focus groups provided useful insight into how students and teachers experienced the blended learning course. However, there was a limited number of focus groups, and one student focus group (condition A) had three students from two classes; all of which had the same teacher. The teacher may have had an influence on the students' experiences in regard to the critical reflection method. It would have been beneficial for the research if the focus group had three students each with a different teacher.

Conducting a RCT in an academic setting was not an easy task as contamination can occur. During one focus group, it appeared that these students had heard from other students about the reflection themes used within their group. Neither the researcher nor the participating teachers were aware of this and did not receive any resistance or demotivation from students. The information exchange may have taken place after the series of lessons. There was no evidence that the results were impacted based on this.

Another limitation within this study was that no usability research had been conducted into the possible influence or added value of the PT. The design of the blended learning course was set up in a participatory design (Engelbertink et al., 2020b) and was evaluated among students and teachers (Engelbertink et al., 2020a). The design had been adjusted based on these results and was used for this research. During this research, it would have been beneficial if we had watched students in an observation room and questioned them in an usability study (using two versions: with *and* without PT). This could have provided more detailed information about their preferences regarding the use of each PT technique. In this setting, the differences between online modules, using PT and not using PT, could therefore be made larger.

We think that discovering someone's personal identity provides more depth in the development of a PI. Students may find out better what their motives are in their profession and this will give students more direction in their future working life. This could be further investigated. Follow-up research can examine to what extent there is better quality in the content of the reflection or with a different scope when students make use of autobiographical

reflexivity as opposed to critical reflection alone. In short, Social Work students and teachers appreciated the blended course with critical reflection combined with autobiographical reflexivity more than critical reflection alone. Students were more affectively and cognitively involved. Further, there were no significant differences between the conditions, so critical reflection combined with autobiographical reflexivity appeared to be an equivalent option to stimulate the critical reflection level of students and to strengthen student PI.

Compliance with Ethical Standards

Informed consent was obtained from all individual participants included in the study.

Disclosure statement

The authors declare that they have no conflict of interest.

ORCID

Monique M.J. Engelbertink  <http://orcid.org/0000-0003-2246-436X>

Saskia M. Kelders  <http://orcid.org/0000-0001-8949-6871>

Gerben J. Westerhof  <http://orcid.org/0000-0002-0993-1448>

References

- Adams, K., Hean, S., Sturgis, P., & Clark, J. M. (2006). Investigating the factors influencing professional identity of first-year health and social care students. *Learning in Health and Social Care*, 5(2), 55–68. <https://doi.org/10.1111/j.1473-6861.2006.00119.x>
- Alsina, Á., Ayllón, S., & Colomer, J. (2019). Validating the Narrative Reflection Assessment Rubric (NARRA) for reflective narratives in higher education. *Assessment and Evaluation in Higher Education*, 44(1), 155–168. <https://doi.org/10.1080/02602938.2018.1486391>
- Alsina, Á., Ayllón, S., Colomer, J., Fernández-Peña, R., Fullana, J., Pallisera, M., & Serra, L. (2017). Improving and evaluating reflective narratives: A rubric for higher education students. *Teaching and Teacher Education*, 63, 148–158. <https://doi.org/10.1016/j.tate.2016.12.015>
- Austin, D., Gilkison, A., & Clemons, J. (2020). Turning reflection into learning : A practice development tool for midwifery students. *Reflective Practice*, 1–15. <https://doi.org/10.1080/14623943.2020.1738370>
- Bernard, R. M., Borokhovski, E., Schmid, R. F., Tamim, R. M., & Abrami, P. C. (2014). A meta-analysis of blended learning and technology use in higher education: From the general to the applied. *Journal of Computing in Higher Education*, 26(1), 87–122. <https://doi.org/10.1007/s12528-013-9077-3>
- Dickinson, J., Fowler, A., & Griffiths, T.-L. (2020). Studies in higher education academics? Exploring transitions and professional identities in higher education. *Studies in Higher Education*, 1–15. <https://doi.org/10.1080/03075079.2020.1744123>
- Engelbertink, M. M. J., Kelders, S. M., Woudt- Mittendorff, K. M., & Westerhof, G. J. (under review). The professional identity of social work students: a cross- sectional study.
- Engelbertink, M. M. J., Kelders, S. M., Woudt-Mittendorff, K. M., & Westerhof, G. J. (2020a). Evaluating the value of persuasive technology and the role of teachers in a blended learning course for social work students. *Social Work Education*, 1–17. <https://doi.org/10.1080/02615479.2020.1715935>
- Engelbertink, M. M. J., Kelders, S. M., Woudt-Mittendorff, K. M., & Westerhof, G. J. (2020b). Participatory design of persuasive technology in a blended learning course: A qualitative study.

- Journal of Education en Information Technologies*, 25, 4115–4138. <https://doi.org/10.1007/s10639-020-10147-x>
- Engelbertink, M. M. J., Wijering, F. H. H., Bohlmeijer, E. T., & Westerhof, G. J. (2019). *Tell your story, a blended learning course to strenghten the professional identity*. Saxion Hogescholen.
- Friesen, M. D., & Besley, S. C. (2013, November). Teacher identity development in the first year of teacher education: A developmental and social psychological perspective. *Teaching and Teacher Education*, 36, 23–32. <https://doi.org/10.1016/j.tate.2013.06.005>
- Graham, M. J. (2017). *Reflective thinking in social work, learning from student narratives*. Routledge Taylor & Francis Group.
- Kelchtermans, G. (2009). Who I am in how I teach is the message: Self-understanding, vulnerability and reflection. *Teachers and Teaching: Theory and Practice*, 15(2), 257–272. <https://doi.org/10.1080/13540600902875332>
- Kelders, S. M., Kok, R. N., Ossebaard, H. C., & Van Gemert-Pijnen, J. E. W. C. (2012). Persuasive system design does matter: A systematic review of adherence to web-based interventions. *Journal of Medical Internet Research*, 14(6), 1–24. <https://doi.org/10.2196/jmir.2104>
- Körkkö, M., Kyrö-Ämmälä, O., & Turunen, T. (2016). Professional development through reflection in teacher education. *Teaching and Teacher Education*, 55, 198–206. <https://doi.org/10.1016/j.tate.2016.01.014>
- Korte, J., Bohlmeijer, E. T., Cappeliez, P., Smit, F., & Westerhof, G. J. (2012). Life review therapy for older adults with moderate depressive symptomatology: A pragmatic randomized controlled trial. *Psychological Medicine*, 42(6), 1163–1173. <https://doi.org/10.1017/S0033291711002042>
- Kuijpers, M., & Meijers, F. (2009). *Studieloopbaanbegeleiding in het hbo: Mogelijkheden en grenzen*. http://www.utwente.nl/igs/tccr/TCCRPublicaties/lectboekkuijpers_meijers1-09.pdf
- Kuijpers, M., & Meijers, F. (2011). Learning for now or later? Career competencies among students in higher vocational education in the Netherlands. *Studies in Higher Education*, 1–19. <https://doi.org/10.1080/03075079.2010.523144>
- Kuijpers, M., Meijers, F., & Gundy, C. (2010). The relationship between learning environment and career competencies of students in vocational education. *Journal of Vocational Behavior*, 78(1), 21–30. <https://doi.org/10.1016/j.jvb.2010.05.005>
- Lamers, S. M. A., Westerhof, G. J., Bohlmeijer, E. T., Ten Klooster, P. M., & Keyes, C. L. M. (2011). Evaluating the psychometric properties of the mental health Continuum-Short Form (MHC-SF). *Journal of Clinical Psychology*, 67(1), 99–110. <https://doi.org/10.1002/jclp.20741>
- Lanas, M., & Kelchtermans, G. (2015). “This has more to do with who I am than with my skills” - Student teacher subjectification in Finnish teacher education. *Teaching and Teacher Education*, 47(2015), 22–29. <https://doi.org/10.1016/j.tate.2014.12.002>
- Lehto, T., Oinas-Kukkonen, H., & Drozd, F. (2012). Factors affecting perceived persuasiveness of a behavior change support system. In *International conference on information systems, ICIS 2012*, Orlando. 3(February2015), (pp. 1926–1939).
- Lengelle, R., & Meijers, F. (2014). Narrative identity: Writing the self in career learning. *British Journal of Guidance & Counselling*, 42(1), 52–72. <https://doi.org/10.1080/03069885.2013.816837>
- Lengelle, R., Meijers, F., Poell, R., & Post, M. (2013). The effects of creative, expressive, and reflective writing on career learning: An explorative study. *Journal of Vocational Behavior*, 83(3), 419–427. <https://doi.org/10.1016/j.jvb.2013.06.014>
- Lengelle, R., Meijers, F., Poell, R., & Post, M. (2014). Career writing: Creative, expressive and reflective approaches to narrative identity formation in students in higher education. *Journal of Vocational Behavior*, 85(1), 75–84. <https://doi.org/10.1016/j.jvb.2014.05.001>
- Levy, D., Ben Shlomo, S., & Itzhaky, H. (2014). The building blocks of professional identity among social work graduates. *Social Work Education*, 33(6), 744–759. <https://doi.org/10.1080/02615479.2014.883600>
- Marin, V. I., Tur, G., & Challinor, J. (2018). An interdisciplinary approach to the development of professional identity through digital storytelling in health and social care and teacher education. *Social Work Education*, 37(3), 396–412. <https://doi.org/10.1080/02615479.2017.1408790>

- Meijers, F., & Kuijpers, M. (2014). Career learning and career learning environment in Dutch higher education. *Journal of Applied Research in Higher Education*, 6(2), 295–313. <https://doi.org/10.1108/JARHE-06-2013-0025>
- Meijers, F., Kuijpers, M., & Gundy, C. (2013). The relationship between career competencies, career identity, motivation and quality of choice. *International Journal for Educational and Vocational Guidance*, 13(1), 47–66. <https://doi.org/10.1007/s10775-012-9237-4>
- Miehls, D., & Moffatt, K. (2000). Constructing social work identity based on the reflexive self. *The British Journal of Social Work*, 30(3), 339–348. <https://doi.org/10.1093/bjsw/30.3.339>
- Moenandar, S.-J., & Huisman, K. (2019). *Not ever absent: Storytelling in arts, culture and identity formation*. Brill. https://doi.org/10.1163/9781848883376_011
- Moussa-Inaty, J. (2015). Reflective writing through the use of guiding questions. *International Journal of Teaching and Learning in Higher Education*, 27 (1), 104–113. <http://www.isetl.org/ijtlhe/>
- Oinas- Kukkonen, H., & Harjumaa, M. (2009). Persuasive systems design: key issues, process model, and system features. *Communications of the Association for Information Systems*, 24 (Article28), 485–500. <https://doi.org/10.17705/1CAIS.02428>
- Roberts, K. M. (2019). An analysis of autobiographical tools in written reflection: Implications for teaching critical thinking and goal-setting. *Reflective Practice*, 20(2), 201–217. <https://doi.org/10.1080/14623943.2019.1575196>
- Ryan, M., & Carmichael, M. A. (2016). Shaping (reflexive) professional identities across an undergraduate degree programme: A longitudinal case study. *Teaching in Higher Education*, 21(2), 151–165. <https://doi.org/10.1080/13562517.2015.1122586>
- Schilder, L. (2013). *Leren dat maatschappelijk werkt*. Eburon.
- Spector-Mersel, G. (2016). Life Story Reflection in social work education: A practical model. *Journal of Social Work Education*, 53(2), 1–14. <https://doi.org/10.1080/10437797.2016.1243498>
- Trede, F., Macklin, R., & Bridges, D. (2012). Professional identity development: A review of the higher education literature. *Studies in Higher Education*, 37(3), 365–384. <https://doi.org/10.1080/03075079.2010.521237>
- Webster, J. D. (1993). Construction and validation of the reminiscence functions scale. *Journals of Gerontology*, 48(5), 256–262. <https://doi.org/10.1093/geronj/48.5.P256>
- Westerhof, G. J., Bohlmeijer, E. T., & McAdams, D. P. (2017). The relation of ego integrity and despair to personality traits and mental health. *Journals of Gerontology - Series B Psychological Sciences and Social Sciences*, 72(3), 400–407. <https://doi.org/10.1093/geronb/gbv062>
- Westerhof, G. J., Lamers, S. M. A., Postel, M. G., & Bohlmeijer, E. T. (2017). Online therapy for depressive symptoms: An evaluation of counselor-led and peer-supported life review therapy. *The Gerontologist*, 1–12. <https://doi.org/10.1093/geront/gnx140>
- Whitaker, L., & Reimer, E. (2017). Students' conceptualisations of critical reflection. *Social Work Education*, 36(8), 946–958. <https://doi.org/10.1080/02615479.2017.1383377>
- Zaichkowsky, J. L. L. (1994). Research notes: The personal involvement inventory: Reduction, revision, and application to advertising. *Journal of Advertising*, 23(4), 59–70. <https://doi.org/10.1080/00913367.1943.10673459>

Appendix 1 Content analysis focus groups

Focus groups	Topic	Positive	Negative	Improvements
Students main condition A (N = 3)	FTF lessons	An example report was helpful (2)	No proper execution (3) Lacked a link between personal and professional side (1) Difficult to give each other feedback while you did not know what reflecting was (1)	Lessons should be more about learning to reflect instead of the online homework assignments (3) Wish to reflect in groups on a self-introduced situation / internship (1) More variety in class (1) Simpler language (3) Reflect on broader life themes (3)
	Online homework	-	Add nothing (1) Learned little (2)	
	NARRA rubric	-	The NARRA was leading too much as if this were the only correct way (2) There was too much focus on the NARRA instead of the student's actions (1)	Need for multiple theoretical reflection models that fit NARRA (1) Simpler language (3) More clarity about the usefulness of the NARRA (3)
	Reflection education	-	From the first year, information about reflection levels is missing (1)	From the first year more attention to reflection education (3)
Students main condition B (N = 3)	FTF lessons	The atmosphere in the classroom was good and it was nice to share personal things, you learned a lot from that (1)	Busy sharing your autobiography but not thinking together about how to reflect critically (2) More depth could have been achieved by focusing more on online modules (1) It does not feel good if only the teacher keeps asking questions about your autobiography, it is nice when students are also involved (1) The atmosphere in the classroom prevented the student from sharing things in the group (1)	It is better to share personal matters in small subgroups (3)
	Online homework	(autobiographical reflectivity)	Positive experiences (3) Defining your points of view and your past helped to reflect critically (1) It provided insight into the past, but has not done much with it (1) It gave insights but he already had these insights because he already reflects a lot (1)	

(Continued)



(Continued).

NARRA rubric	Very educational (1)	The large number of assessment criteria framed the "natural" reflection process (3)	Need for more information about the NARRA during lessons, so that more attention was paid to critical reflection, the rubric and the report (2) Simpler language is needed (3) Autobiographical reflexivity should be prior to lessons on NARRA (3)
Reflection education	-	-	-
Teachers main conditions A (N = 1) B (N = 2)	During class the students worked on their reflection report (condition A) (1) The homework led to nice discussions and questions during class (condition B) (2) Interest from students for each other due to homework (condition B) (1)	The content and structure of the lessons was too monotonous and sometimes did not fit the group (condition A) (1) Some themes students experienced as too personal to share with the group (condition B) (1)	A mix of autobiographical reflexivity and critical reflection is preferable because it is more interesting with broader theme's and activate students (3) The lessons should be more interactive, more varied with documentaries, videos, guest speakers (3) A safer atmosphere in the classroom so that students dare to share more (3)
Online homework	Students seemed to be working seriously on the assignments (condition A) (1) The online modules were the most enjoyable for students; they worked independently (condition B) (1) The students show intrinsic motivation for online modules, because it started with themselves, some are proud of the result (condition B) (2)	The homework could not always be provided with substantive feedback from the teacher (due to time) and fellow student (homework was not always done) (condition A) (1) Creative assignment is not carried out by anyone (condition B) (2)	Autobiographical reflexivity adds more than the online NARRA assignments (3) Autobiography of the students as part of their portfolio (1)
NARRA rubric	Useful rubric, stimulates: critical reflection; to see difference between levels; to take different perspective (3) Complete rubric (3)	Despite the rubric, students continue to find it difficult to reflect (3) It takes a while to find out how other reflection models fit into the NARRA (2) Students with low grades had often not been in class either (condition A, 1)	Attention remains necessary on how to work with students and the rubric (3) Simpler language (3) Teachers think that students can show more about themselves in the report (3)
Reflection education	The lesson plan and power points were provided (condition A and B) (3)	Reflection lessons every two weeks makes students forget the previous lesson more quickly (3)	Autobiographical reflexivity should be prior to lessons on NARRA (3)