



Mindfulness to regulate emotions: The Mindfulness and Emotional Intelligence Program (PINEP) and its adaptation to a virtual learning platform



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ABSTRACT

The present study examines the effect of the Mindfulness and Emotional Intelligence Program (PINEP), adapted to the virtual learning platform *Moodle* where participants receive Mindfulness training in 12 sessions lasting an hour and a half. The sample consists of 89 people, assigned randomly to a control group on the waiting list and to an experimental group that undertakes the training. The results indicate that the participants who completed PINEP showed improvement in the variables of health, empathy and mindfulness, in comparison with the participants of the group on the waiting list.

1. Introduction

Information and communication technologies (ICTs) are present in most training institutions, and allow for the creation of new communicative environments that have opened up the possibility of developing new training experiences [13]. Several studies in different populations have shown that the use of ICTs in the educational field favors; the improvement of certain skills and abilities [33]. The development of learning strategies such as curricular and instructional planning [1,15] and the acquisition of knowledge by students immersed in *e-learning* environments [6].

One of the most widely used platforms in educational fields and one which proposes a new way of understanding the process of collaborative teaching-learning is the *Modular Object-Oriented Dynamic Learning Environment (Moodle)*. This platform promotes the participant's active participation in the acquisition of their own knowledge.

Moodle at the pedagogical level offers an unparalleled didactic tool when transmitting knowledge, improving organization or facilitating the exchange of information [1,6,7,14,23,29,30]. *Moodle* allows for the inclusion of a wide range of educational resources for the participants, as well as offering the facilitator, teacher or counselor certain autonomy, control and monitoring over the work of the participant [9].

Moodle is configured around what is called social constructionist

pedagogy [32] with the following characteristics according to Pérez, Rojas, and Paulí [21], Being free software, it allows for system modification and is adaptable in function to different needs.

- It permits access to the individual results of each student, according to their grades, use of resources, participation in groups, forums and so on thus allowing the facilitator to organize and employ distinctive teaching strategies.
- It allows for interaction between users, facilitating communication and learning.
- It stimulates and enhances independent work and non-contact activities.
- It reduces temporal and spatial restrictions; allowing for independence of schedules, geographical location, type of equipment and operating system.
- It provides the facilitator with the necessary tools to measure the level of assimilation, knowledge and skills of the participant. For this, it uses questionnaires, forums and tasks. Some of these activities can be designed so that the student can self-evaluate.

The benefits that *Moodle* brings are mainly related to experiences within the teaching-learning process. However, to date there is little evidence of experiences with programs or training aimed at promoting

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aspects related to health or well-being. This investigation aims to provide an advance to this purpose, presenting a program in an online format that adapts personal training to a virtual platform.

1.1. Adaptation of the PINEP program to a virtual teaching platform

The Mindfulness Emotional Intelligence Program (PINEP) of Ramos, Recondo, and Enríquez [28] proposes that emotional intelligence (EI) training programs could benefit from including mindfulness as a technique. Mindfulness makes it possible to adequately address arising emotions in the here and now, addressing them not only cognitively or intellectually but also experientially. The proposal of PINEP is to combine two independent training tools (EI and mindfulness) and therefore, bring about the integration of both constructs [28].

PINEP includes mindfulness training in a double sense; on the one hand, it would include exercises typical of other training programs based on the *Mindfulness Based Stress Reduction Program* (MBSR [16,17]) and on the other, it employs mindfulness as a means to allow participants to come into contact with their own emotional experience (both positive and negative) facilitating an attitude of curiosity, non-judgment, acceptance and compassion, which would allow for a natural regulation of emotions [25].

PINEP is flexible in nature, allowing for its application to different populations and contexts [26]. Previous research on the effectiveness of the program have shown changes in immune modulation [20], improvements in the ability to identify, understand, assimilate and regulate emotions in groups of school teachers [4] effects on emotional intelligence (emotional repair), extroversion, mindfulness (acting consciously), empathy (putting things into perspective), and cognitive emotional regulation in a university population [10].

Up until now, PINEP has been transmitted in person without any online element. The aim of this paper is to analyze the effects of the PINEP program in an online format, through its adaptation to a Moodle platform. To this end, the program was organized with exercises of an exclusively intrapersonal nature divided into twelve sessions lasting one and a half hours and the effects on health, mindfulness and empathy were analyzed, with the hope of finding a positive effect in these variables.

2. Methods

2.1. Participants

The sample consists of 89 participants (15 men and 74 women) aged between 19 and 46 years ($M = 25.05$, $SD = 5.39$). The participants were selected through their enrollment on an online training course offered by the *Foundation General* of the University of Malaga (FGUMA). All the participants consented to be part of the study and were divided randomly into experimental and control groups, forming one group that would undergo training ($n = 44$) and a second group on a waiting list that would start training 13 weeks later ($n = 45$).

2.2. Procedure

For the collection of data, a pretest-post-test design with a control group was followed. The program consists of a total of twelve sessions, scheduled in as an hour and a half per session. For this study, PINEP has been adapted to a Moodle 2.2 virtual teaching platform where participants carried out the program weekly, during a total of twelve weeks. In this adaptation, the program has taken on the following structure:

2.2.1. Presentation and evaluation of the program

Before beginning the sessions that comprise the program, the participant is informed of the steps to follow, of the procedure to follow in each of the sessions and of the evaluations that will take place throughout the program, finding all the theoretical content in

format.pdf (portable *document format*) permanently in Moodle.

Also participants have a general forum, a specific forum for each session to comment or ask questions, a forum for the presentation of news and a “leisure space” to share and add links of interest related to the subject matter, open to both the teacher and the participants. Finally, and taking into account that online training encourages the active participation of participants [18] a quick response to personal questions raised through forums or e-mail is essential, facilitating a close link between facilitator and participant.

The chronology has been as follows:

- Welcome to the online program
- Bio data of teacher-trainers
- Rules and instructions to adhere to for the correct performance of each of the sessions and their sequencing
- Informed consent and a pretest assessment of health, empathy and mindfulness. This evaluation is done telematically, being registered automatically.

2.2.2. Theoretical and practical content of the training

1. Theoretical introduction to orientate the participant to the corresponding practice, which includes the following elements:
 - a. Initiation to mindfulness.
 - b. Basic functions of breath.
 - c. Mindfulness: Concept, function and essential components; stop, observe, return, presence and acceptance.
 - d. Skills and attitudes to develop with the practice of mindfulness. These are patience, confidence, beginner's mind, non-judgement, non-striving, accepting and giving in/letting go.
 - e. Therapeutic benefits associated with the practice of mindfulness: exposure, sustained attention, cognitive change, self-management and acceptance.
2. Practice of mindfulness. This section is included as a previous training session for the undertaking of the subsequent exercises of PINEP. The mindfulness practice consisted of a series of guided audios, which were recorded in a professional studio in order to ensure the highest possible quality.
3. Practice of Full Emotional Intelligence. The participant is asked to face different emotional situations through mindfulness. These exercises would move progressively from lower to higher complexity, coinciding with the development of the different emotional intelligence skills described below.
 - a. Perception and Emotional Expression. The participant must pay full attention to stimuli with a high emotional content, the objective being to pay attention to the emotions that naturally arise and deal with them from a mindfulness perspective.
 - b. Emotional Comprehension. The exercises offered contain a certain emotional complexity with the objective of developing the ability to understand different emotional states, their evolution and their meaning, the thoughts that generate those emotions, and what consequences and reactions they provoke.
 - c. Emotional Facilitation. In this section the exercises that are included help the participants to realize the way in which different experiences affect emotional states and thoughts that are related to them.
 - d. Emotional Regulation. In this part of the program, the participant is urged to approach emotions (whether pleasant or unpleasant) without trying to avoid them or become trapped in them in an intrusive way. It is therefore about accepting emotions, even if they bother us, without judging them and without evaluating them, with an attitude of curiosity and acceptance.

Lastly, and after working on EI skills, compassion, the last step of emotional regulation, is invoked. During the course of the program, in each *Vipassana* meditation (involving concentration on the body or its

sensations, or the insight, which this provides) the participant is asked to identify and record the negative thoughts that arise during the practice, identifying and integrating their emotional thoughts in a compassionate way.

4. Conclusions. Description of the objective of the practice in relation to the subject matter.
5. Posttest assessment of health, empathy and mindfulness. As in the pretest, this evaluation is done through a virtual questionnaire embedded in the platform.
6. Practice diary. The participant is asked to write their impressions regarding each practice, thus collecting information about their learning, and the sensations/emotions, setbacks and advances that arise as a result. This diary is composed of five open questions such as: How do you feel after doing the practice? Or; how would you apply these exercises to your daily life?
7. Homework. The participant is provided with a text document and an audio (corresponding to the session material) with mindfulness exercises to practice between sessions, having to record the time spent on the practice and the corresponding sensations, thoughts and emotions experienced during it. The tasks are to be sent back before beginning the next session.

2.3. Instruments

Health: The Mental Health Questionnaire (MH-5 [34]; Spanish adaptation by Ref. [2]). This scale measures the degree of depressive and anxious symptomatology. Participants should indicate on a scale with a Likert response format of 6 points (0 = never, 6 = always) how they have felt during the last four weeks. High scores on this scale are associated with better mental health.

Mindfulness: It was measured through the *Five Facet Mindfulness Questionnaire* (FFMQ [3]; Spanish adaptation by Ref. [24]). This questionnaire is composed of 39 items on a scale with a Likert response format of 5 points (1 = never or seldom true, 5 = very often or always true). It measures mindfulness from five factors or facets:

1. Observing: Focuses on observing, noticing or attending to internal and external experiences, such as bodily sensations, cognitions, emotions, visions, sounds and smells.
2. Describing: It refers to naming and describing the experiences observed with words, but without establishing a judgment or a conceptual analysis of them.
3. Acting with awareness: Centers on focusing the attention consciously on each activity that is carried out in each moment; as opposed to mechanical behavior (automatic pilot).
4. Non-judging: It refers to taking a non-evaluative and non-judgmental position towards the experiences of the present moment, so that these are accepted and allowed into the conscience, without trying to avoid them, change them or escape from them.
5. Non-reactivity: In the face of internal experiences, it refers to the tendency to allow feelings and emotions to flow or let yourself go, without allowing yourself to become “trapped” or “hooked”.

Empathy: Empathy was measured using the *Interpersonal Reactivity Index* (IRI, Davis [8], Spanish adaptation by Ref. [22]). This scale evaluates individual differences in empathic tendencies from a multi-dimensional point of view. It consists of 28 items with a Likert type response format of 5 points (1 = does not describe me well; 5 = describes me very well). It is composed of four subscales:

1. Perspective Taking (PT): Measures the spontaneous attempts of the subject to adopt the perspective of the other in real situations of daily life and thus see things from the other's point of view, without necessarily experiencing an affective response.
2. Empathic Concern (EC): Measures the response of the subject in

relation to feelings of compassion and affection for others.

3. Personal Distress (PD): Measures the feelings of anxiety and discomfort that the subject manifests by observing the negative experiences of others.
4. Fantasy (FS): Measures the subject's tendency to identify with characters from the cinema or literature. That is, it reflects the imaginative capacity of the subject of putting himself in the place of fictional characters.

This scale assesses both the cognitive aspect of empathy through *perspective taking* and *fantasy* as well as the emotional reaction in *empathic concern* and *personal distress*. High scores on this scale are associated with greater perspective taking, greater empathic concern, greater personal distress, and greater fantasy.

3. Results

A between-group analysis of covariance (ANCOVA) was performed with the scores from MH-5, FMMQ and IRI as dependent variables. The PINEP was considered independent variable (absence or control group, and presence or experimental group) and the respective pretest scores of each dependent variable as covariates. Thus, the differences between groups were estimated with the differences in pretest scores removed. The statistical analysis was performed with IBM SPSS.

ANCOVA results are presented in Table 1. Statistically significant differences can be observed in health, observation, description, absence of judgment and absence of reactivity. In *Absence of Reactivity*, results show that the experimental group has higher scores in the posttest compared to the control group. Likewise, there are significant differences in *Fantasy* and tendency to statistical significance in *Distress*, in which the experimental group obtains lower scores in the pretest.

4. Discussion

The present study incorporates PINEP to a virtual teaching platform in order to analyze whether this form of training provides psychological benefits to the participants. To do this, the effect of this program on mental health, mindfulness and empathy has been analyzed. The results are tending to fulfil expectations, and positive results of the training have been demonstrated in the following specific areas:

The experimental group obtained higher scores in MH-5 in the posttest compared to the control group. This means that the participants of the program perceived less depressive and anxious symptomatology and consequently the perceived sensation of well-being of

Table 1

Means adjusted to the pretest measurements of the scores extracted from MH5, FMMQ and IRI, statistical F, associated probability and effect size (η^2 partial).

Variables	CG	EG	F	p	η^2_{partial}
MH5					
Health	4.04	4.62	10.94	< .01	.11
FMMQ					
Observation	3.06	3.49	10.32	< .01	.11
Description	3.59	3.87	5.01	.03	.06
Acting consciously	3.47	3.58	0.43	.51	.01
Absence of judgement	3.34	3.76	5.53	.02	.06
Absence of reactivity	2.84	3.12	4.65	.03	.05
IRI					
Perspective taking	3.71	3.79	.51	.48	.01
Empathic concern	3.97	3.81	2.86	.09	.03
Personal distress	2.48	2.27	3.56	.06	.04
Fantasy	3.58	3.23	6.69	.01	.07

Note: CG = Control Group; EG = Experimental Group; F = Statistical F; P = Associated probability; η^2 partial = effect size; MH5 = The Mental Health Questionnaire; FMMQ = Five Facet Mindfulness Questionnaire; IRI = Interpersonal Reactivity Index.

these individuals was greater.

Regarding variables related to mindfulness, higher scores were found in the experimental group related to Observation, Description, Absence of judgement and Absence of reactivity. The change in Observation implies that the tendency to observe one's emotional state increases. This increase in itself does not mean that we can conclude emotional improvements in participants as individuals that focus excessively on their emotional states can have a worse adjustment towards their emotional experience [11,12]. However, the fact that greater observation is accompanied by higher levels of non-judgement of the experience and a decrease in reactivity is an indication that this type of training facilitates an emotional approach that will result in a better adaptation to the experience.

Regarding empathy, a tendency to statistical significance was found in relation to a decrease in discomfort when exposed to negative experiences of other individuals by the experimental group. It is important to remember that the training was carried out on a non-clinical population and in a virtual format, limiting the exposure of people to interpersonal situations, which are the most optimal in training of variables such as empathy. As for fantasy, the experimental group showed a lower tendency of getting involved with fictional characters after training.

As for limitations of the present study it must be mentioned that the evaluation of the tested variables has been carried out only through self-report. Future studies should include physiological measures that could provide more information to evaluate the effectiveness of the program. In addition, the design has only involved a control group and an experimental group and it would be desirable to incorporate other groups that have received another type of intervention. This would allow for a definition of the differential effects of emotional training programs based on mindfulness. Finally, it is necessary to point out that the online version of PINEP includes only intrapersonal training, leaving interpersonal work to one side. The limitations of a virtual platform make the inclusion of complex interpersonal exercises of this program unfeasible. Future versions could study how to include innovative internet resources, such as chats or video conferences.

One of the characteristics of PINEP is that it includes a wide range of emotional situations that, while preparing the individual for a broad-spectrum emotional approach, could prove problematic when evaluating their specific effects in certain areas. Future studies could target particular emotional situations in which to intervene, insisting on exercises that have common objectives and evaluating the differential effect on the skills associated with these situations. Future research should also assess the effect on variables such as life satisfaction, positive affect, self-esteem and psychological strengths, which this program could have an impact on [5, 19, and 31]]. At the same time, it is necessary to design ways to implement mindfulness in therapeutic contexts. In this sense, research design could be crucial to allow for the specification and adaptation of these practices to a clinical population and for their evaluation of their differential effects in a precise way.

Ultimately, PINEP aims to generalize the use of mindfulness to different emotional situations. Individuals who practice regularly can especially benefit from this training because it promotes an attitude of mindfulness that is not strictly limited to the practice of meditation and the skills acquired can be deployed in everyday situations. Some studies demonstrate the difference between a general disposition and an attitude of mindfulness in the particular way in which a specific emotional situation is approached, making use of the skills acquired after the practice of mindfulness [5,27]. The present study has presented the adaptation of the PINEP program to Moodle; one of the most widely used platforms in educational fields, and has presented the initial evidence of the benefits that can be derived from training. This resource allows for an increase in the number of people who can access training, facilitates the participation of people who cannot attend face-to-face training, and controls the bias that can be brought by the trainer who carries out the mindfulness program in face-to-face sessions.

The results of the adaptation of PINEP to Moodle are encouraging and encourage the continued investigation into the benefits that may result from this type of training, as well as to refine the adaptation of the program to a virtual format in order to consolidate results and extend the effects.

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