

10TH GRADE HIGH SCHOOL PHYSICS EDUCATION VIA SOLAR COOKING

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Abstract: Though every high school and local or country-wide governmental education office has its own guidelines and emphases for any field of learning, with suitable adjustments, solar cooking can serve as an excellent tool by which to teach students of any level natural phenomena, or, more specifically, physics. We report from a three year experience at an environmental high school where 10th graders, enrolled in the natural sciences, where taught physics.

The guiding principle was to teach the students both in theory and by ‘doing’, namely, by building and testing solar cookers of different designs (parabolic mirror, box and panel). We present the curriculum, the subjects covered in the course, as well as the experimental work performed with the students; the success and failures of over- or underestimating the efforts and time required to design and build cookers from low-cost materials.

The courses ran for two-semesters. The first semester was used to introduce the physical concepts, such as temperature, heat transfer, solar radiation, efficiency, and material properties. Towards the end of the first semester, groups of students started to develop ideas for designing and constructing solar cookers, based on available material with the teacher guiding the students to a ‘doable’ design, given the amount of time and resources available, with the actual construction starting in the second semester, culminating towards the semester end with outdoor testing and actual cooking food.

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