Some additional notes on the Faraday Effect.

1) Some possible extensions of the lab would be to measure the Faraday effect with other transparent materials which you might be able to find.
2) You could try to measure the frequency dependence of the Faraday Effect using the colored LED as a light source instead of the frosted lamp. Note that there is a red filter in front of the polarizer and this would have to be removed first.
3) The original power supply blew up, so we have a slightly less powerful supply with the magnet now. However, this should still give good results.

The Faraday Effect itself is rather straightforward, but the "why" of the Faraday Effect, e.g. "Why should materials rotate the polarization plane when subject to an axial magnetic field" can be a bit hard to follow. I haven't found any references which describe all the pieces of the puzzle in one place, but below you can find some suggested readings.

1) You need to understand polarized light. A gentle introduction is section 34.6 of Halliday, Resnic and Walker, however, this only discusses linear polarization. For circular polarization you can look at Griffiths (Chapter 8, Problem 4).
2) You need to understand the Zeeman Effect. Look at Thornton and Rex *Modern Physics*, Section 7.4. If you don't have Thornton and Rex handy, most other quantum or modern physics books should provide a similar treatment.
3) You need to understand the origin of the frequency dependence in dielectrics. This is described in Griffiths Section 8.4.2.
4) After doing this background reading, go ahead and read the sections on the Faraday and Zeeman effects in Melissinos and Napolitano, and in Jenkins and White. You can also look at the Wikipedia page. http://en.wikipedia.org/wiki/Faraday_Effect . It has some nice graphics.
5) Now go back and read the theoretical discussion in the lab manual, it should be perfectly comprehensible.
6) Congratulations! You now understand the Faraday Effect.

References:

1. David J. Griffiths, *Introduction to Electrodynamics*. (Prentice-Hall Inc., Englewood Cliffs, 1981).
2. Stephen T. Thornton and Adrew Rex, *Modern Physics for Scientists and Engineers*. (Brooks/Cole, 2002).
3. Francis A. Jenkins and Harvey E. White, *Fundamentals of Physical Optics*, First ed. (McGraw-Hill Book Company, New York and London, 1937).